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# COMMERCIAL FISHERIES REVIEW

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**Joseph Pileggi, Editor**

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\* \* \* \* \*

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## MACHINES SOLVE HANDLING PROBLEMS IN OYSTER PLANTS

By Charles F. Lee\* and F. Bruce Sanford\*\*

### INTRODUCTION

This article shows three handling machines: a shellstock stock conveyor, a bulk-handling conveyor, and a forklift.

### SHELLSTOCK CONVEYOR

Anyone who visits a plant for shucking oysters soon realizes that to produce a substantial volume of oysters, an oysterman must unload and move to storage and then to shuckers' benches a large quantity of live oysters in the shell or "shellstock" as it is known to the oysterman. Depending on the yield and the amount of empty shell present, 1 to 2½ bushels of shellstock must be shucked to obtain 1 gallon of oysters.

Some of the largest oyster plants have traveling-crane hoists to carry shellstock to bins over the shucking benches. In smaller plants, the problem of getting an adequate supply of shellstock to each shucker when he wants it and where he wants it has not lent itself to ready solution by mechanization. Shuckers work at widely different rates and often are scattered randomly among the shucking stalls when, as is normal, the plant is operating at less than peak capacity. Thus most plants still use men working with a wheelbarrow and shovel, or carts with wire baskets also filled by shovel. In New Orleans, La., the shellstock comes into the plant in bags and the bags are emptied on the shucking bench. Each of these systems involves heavy manual labor.

One oysterman has found a novel solution to this problem. Figures 1 to 4 show how he does it.

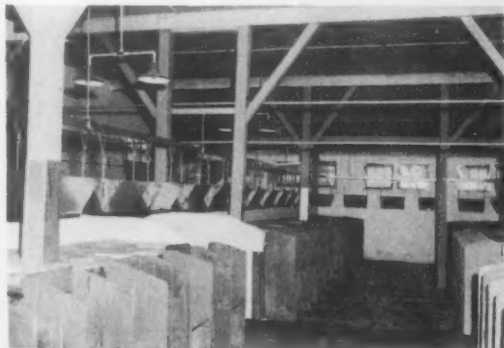


Fig. 1 - An overhead conveyor track carries the "cars," filled with shellstock, on an endless chain to the shuckers' tables.

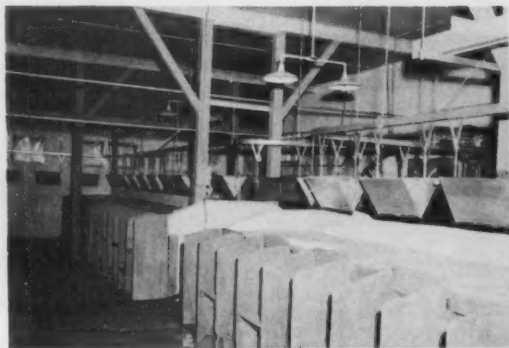


Fig. 2 - The V-shaped containers slowly pass in front of the shuckers. Whenever a shucker needs oysters, a light pull on the handle dumps the car contents on the bench.

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\*\*Chemist-in-Charge, Branch of Reports, Seattle, Wash.



Fig. 3 - This is the device used for loading the cars. A tractor-mounted scoop fills the hopper, and the shell oysters drop by gravity into the trough when the operator pulls the lever.

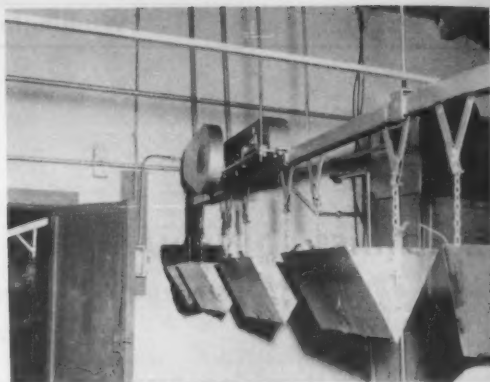


Fig. 4 - A small motor, mounted directly on the track, furnishes the driving power.

#### BULK-HANDLING CONVEYOR

Another conveyor that has proved useful in this plant is a self-propelled conveyor loader (fig. 5) for loading shellstock into trucks or for loading empty shell onto barges.



Fig. 5 - The bucket-loading conveyor is on a halftrack, is self-propelled, and includes a small lifting boom located on top. The commoner type of portable loader, seen in the right background, is mounted on large wheels and is moved by manpower.

## FORKLIFT

The operator of this plant had another material-moving problem that he solved with ingenuity. The problem was to design a forklift that could be attached to a small tractor and powered by the hydraulic cylinders that normally lifted the scoop. One requirement was that the fork be maintained in a horizontal position, regardless of the height to which the fork was lifted. In solving this problem, he first made a small model with cardboard, matches, wire, and glue. After he worked out the required shape of lever and frame, he had a shop make the equipment in heavy steel. The trick was in getting the shape just right for the lever that slides over the "hump" (fig. 8) so that the load comes up evenly all the way and does not tip forward or slide backward at any point. Figures 6 to 11 show the detail.



Fig. 6 - The tractor-mounted forklift will rise to a height adequate to place a load on the platform of the cold-storage building.



Fig. 8 - The lever (center) that positions the platform during the lift has a unique shape. This lever slides over the "nose" on the forward edge of the mounting frame.



Fig. 7 - The fork lies perfectly flat at floor level.



Fig. 9 - Shown from another angle is the relative position of the framework when the fork is raised.



Fig. 10 - Here is seen the positioning lever in the elevated position. The shape, angle, and length were found by trial and error with models.

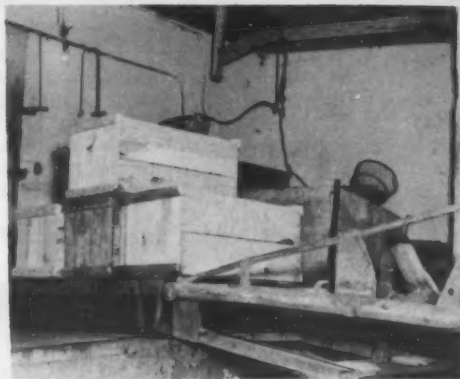


Fig. 11 - Four boxes of iced oysters are being delivered at the loading platform. Because of the unique design of the forklift, the fork can be lifted from ground level to maximum height while continuously maintaining the pallet in the horizontal position.

Note: The authors gratefully acknowledge the cooperation of Messrs. Cranston and Raymond Morgan, W. F. Morgan and Sons, Inc., Weems, Va., in the preparation of this report.



#### SEAFOOD AND EGGS MAKE GOOD MAIN DISH FOR FAMILY MEAL

A combination of seafood and eggs will make a nutritious, delightful, and moderately-priced main dish for the family table. Both seafood and eggs are excellent sources of the protein so necessary for the repairing and rebuilding of body tissues.

The home economists of the Bureau of Commercial Fisheries suggest the following recipe containing seafood and eggs.

##### SCALLOPS LORRAINE

1 pound scallops, fresh or frozen	2 tablespoons sherry
1 quart boiling water	2 tablespoons chopped pamiel
2 tablespoons salt	1 teaspoon salt
1 cup pastry mix	1/2 teaspoon celery salt
3 eggs, beaten	Dash pepper
3/4 cup coffee cream	Paprika

Thaw frozen scallops. Remove any shell particles and wash. Place in boiling salted water. Cover and return to the boiling point. Simmer for 3 to 4 minutes, depending on size. Drain. Chop scallops. Prepare pastry mix as directed. Roll and line a 9-inch pie pan. Combine eggs and cream; add remaining ingredients except paprika. Place scallop mixture in pie shell. Sprinkle with paprika. Bake in a moderate oven, 350° F., for 35 to 40 minutes or until pie is firm in the center. Serves 6.



## EFFECT OF BUTYLATED HYDROXY TOLUENE AND POTASSIUM SORBATE ON DEVELOPMENT OF RANCIDITY IN SMOKED MULLET

By Mary H. Thompson\*

### ABSTRACT

Mullet fillets were smoked and divided into groups according to the type of brine solution used: (1) 10-percent brine, (2) 0.1-percent butylated hydroxy toluene in 10-percent brine, (3) 1.0-percent potassium sorbate in 10-percent brine, and (4) 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate in 10-percent brine. The fillets were stored at 37° F. and were analyzed for the development of rancidity at intervals of 2 weeks.

Butylated hydroxy toluene gave the longest protection against rancidity. Potassium sorbate, however, protected the fillets against rancidity throughout the marketable life of the smoked product.

### INTRODUCTION

Preservation of fishery products by smoking is a method that has long been in use, but in these days of modern refrigeration, smoke preservation is being used less extensively. More consumers, however, are becoming aware of the delicious taste of smoked fish. Many species of fish and shellfish are smoked and distributed today, but because of the short shelf life of these products, distribution is often restricted to those areas near the source of the material. The major problem--that of short shelf life--is due to two causes: (1) the rapidity with which this type of product develops surface molds and (2) the rapidity with which it develops rancid flavors.

To solve the first difficulty, that of mold development, researchers have tried various mold inhibitors. The use of potassium and sodium sorbate in extending the shelf life of smoked fish has been investigated by Geminder (1959). The use of potassium sorbate on smoked mullet fillets has been further investigated, at this laboratory, by Waters (1960). In both studies, it was found that potassium sorbate was effective in preventing mold deterioration of smoked fishery products.

The next problem was that of rancidity. The constituents of smoke have been shown to have an antioxidant effect on fatty fish fillets (Erdman, Watts, and Ellias, 1954). Rancid flavors become evident in smoked mullet in a short time, however, effectively keeping the shelf life of this product short. The retardation of the development of rancidity in fresh frozen mullet has been studied in detail by Saenz and Dubrow (1959), who found that the shelf life of frozen vacuum-packed mullet fillets could be extended 4 to 5 months through proper application of antioxidant.

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Fig. 1 - Chemist analyzing smoked mullet fillets for rancidity by the thiobarbituric acid method.

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To determine further the effects on rancidity development of the antioxidant and antimycotic and a combination of both as used in previous experiments concerned with mold spoilage (Waters 1960), techniques found in the literature were applied to smoked mullet. This report will describe the effects of butylated hydroxy toluene, potassium sorbate, and a combination of both on rancidity in smoked mullet fillets.

#### EXPERIMENTAL PROCEDURE

A large lot of mullet (*Mugil cephalus*) was obtained from a local seafood concern. These mullet had been caught in Breton Sound, Miss., iced, and processed within 24 hours.

**PROCESSING METHODS:** The mullet were scaled and eviscerated. They were then randomly divided into four groups according to the type of brine to be employed. The brines used were as follows:

- (1) Control--10-percent brine.
- (2) Butylated hydroxy toluene--0.1-percent butylated hydroxy toluene in 10-percent brine.
- (3) Potassium sorbate--1.0-percent potassium sorbate in 10-percent brine.
- (4) Butylated hydroxy toluene and potassium sorbate--0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate in 10-percent brine.

The effective concentration of butylated hydroxy toluene and potassium sorbate had been previously determined by Waters (1960). The fillets were allowed to remain in the brine for 30 minutes at room temperature (75° F.). They were then removed from the solution and drained. Six fish from each group were removed and dried in an oven as a negative control for use in determining the amount of added TBA color development, if any, contributed by substances in the brining process. The remainder of the fish were smoked according to the procedure developed in this laboratory and previously recorded by Waters (1960). After being smoked, the fish were vacuum-packed in "cryovac" bags and stored at 37° F. The following day, six fish from each group were removed from the 37° F. room and analyzed as positive controls to determine TBA color development contributed by substances in the smoking process. Samples of six fillets of each group were removed at intervals of 2 weeks for analysis.

**CHEMICAL METHODS:** A butterfly fillet of mullet was ground three times in a General food grinder and a 1-gram sample was removed and analyzed for rancidity according to the thiobarbituric acid method (Yu and Sinnhuber 1957; Sinnhuber and Yu 1958). The amount of aldehyde produced during the rancidification of oils, as measured by the formation of a red color through the reaction of malonaldehyde with thiobarbituric acid, has been used as a measure of rancidity by these authors.  $E_{1\%}^{1\text{cm}}$  at 535 mmu. was measured in a Bausch and Lomb "Spectronic 20" colorimeter. The factor for conversion of absorbancy to rancidity value (TBA value) was determined for this colorimeter with 1,1,3,3-tetraethoxypropane standard solution. A factor of 57 was found; in other words, an absorbance of 1.0 indicated 57 milligrams of aldehyde per 1,000 gram sample.

Each individual sample was analyzed for moisture and oil. Moisture was determined according to the method of the Association of Official Agricultural Chemists (1955) for fishery products, with the exception that Ottawa sand was used instead of asbestos. The AOAC (1955) acid hydrolysis method of oil analysis was employed.

**ORGANOLEPTIC TESTS:** Limited organoleptic tests were also used to indicate progress towards rancidity. The following classifications were employed: good--prime quality; fair--smoky flavor still discernible; rancid--rancid-oil flavor definitely noticeable. Fillets that were rated good or fair did not have a discernible rancid flavor, and these classifications merely serve to indicate progressive loss of smoky flavor. Fillets that were rated rancid ranged from those fillets with a barely discernible rancid flavor to those with a distinct rancid flavor.

## RESULTS

The moisture content of the fish fillets ranged from 43.5 percent to 79.4 percent and averaged 60.8 percent. Since the TBA value is based upon the amount of color produced by a 1,000-gram sample of nondried material and since the fillets vary widely in moisture content, it becomes necessary to correct the TBA values either to the average moisture content of the fillets or to a dry-weight basis for comparison purposes; therefore, the TBA values corrected to 60.8-percent moisture are shown in table 1. The oil content of the fillets ranged

Table 1 - TBA Value, Oil and Moisture Content of Smoked Mullet Fillets Stored at 37° F. for 12 Weeks

Table 1 - TBA Value, Oil and Moisture Content of Smoked Mullet Fillets Stored at 37° F. for 12 Weeks																					
Type of brine solution		Negative Control (0 weeks)					Positive Control (0 weeks)					Period 1 (2 weeks)					Period 2 (4 weeks)				
		TBA/ value		Moist- ture		Ratio oil moisture: oil	TBA/ value		Moist- ture		Ratio oil moisture: oil	TBA/ value		Moist- ture		Ratio oil moisture: oil	TBA/ value		Moist- ture		Ratio oil moisture: oil
		value	test	value	test		value	test	value	test		value	test	value	test						
																	..(Percent)..				
10 percent brine	1	0.4	-	2.6	27.6	0.1	4.1	3.5	62.4	2.6	24.0	5.9	2.8	62.8	8.3	7.6	9.4	6.3	59.3	11.0	5.4
	2	0.5	-	4.8	26.9	0.2	4.1	3.5	58.2	3.5	16.6	6.6	3.5	58.7	7.7	7.6	12.5	9.4	63.3	3.3	19.2
	3	1.6	-	7.1	31.2	0.2	2.5	1.9	61.6	4.4	14.0	7.5	4.4	60.6	6.1	10.0	10.9	7.8	61.2	8.3	7.4
	4	0.2	-	2.6	24.6	0.1	3.0	2.4	60.6	3.5	17.3	7.0	3.9	60.0	7.1	8.5	9.6	6.5	64.0	9.4	6.3
	5	0.8	-	6.8	26.4	0.3	1.9	1.3	65.5	3.2	19.8	9.9	6.8	60.0	7.0	8.6	9.6	6.5	59.6	7.4	8.1
	6	0.4	-	3.6	24.6	0.2	1.9	1.3	58.0	4.0	14.5	8.6	5.5	61.7	8.4	7.3	10.7	7.8	58.4	9.9	5.6
Average		0.6	-	4.6	26.6	-	2.9	2.3	60.7	3.5	-	7.6	4.5	60.7	7.4	-	10.4	7.5	61.0	7.4	-
0.1 percent H <sub>2</sub> O <sub>2</sub> in 10 percent brine	1	2.1	-	19.2	18.5	0.1	2.9	1.4	64.4	9.0	7.2	5.8	1.8	62.0	8.1	7.7	4.8	0.8	62.8	5.5	11.4
	2	1.2	-	23.7	23.4	1.0	2.3	0.8	64.5	4.6	14.0	7.7	2.7	60.6	9.9	6.1	6.8	2.8	61.2	7.9	7.7
	3	0.8	-	12.2	23.7	0.6	3.4	1.9	60.9	8.9	6.8	4.9	0.9	59.6	11.0	5.4	10.6	6.6	60.1	9.4	6.3
	4	1.1	-	15.6	24.2	0.6	4.9	3.4	67.4	5.6	12.0	4.7	0.7	61.6	7.5	8.2	10.0	6.0	60.4	8.8	6.9
	5	1.8	-	15.8	19.3	0.2	2.4	0.9	64.0	5.0	12.6	6.5	2.5	59.3	6.1	9.6	6.4	2.4	61.9	6.0	10.3
	6	1.7	-	20.1	22.2	0.9	1.5	0.0	64.2	4.4	14.6	4.7	0.7	60.7	5.2	12.1	8.4	4.9	63.4	9.5	8.4
Average		1.5	-	17.4	21.2	-	2.9	1.4	64.2	6.3	-	5.6	1.6	60.8	8.0	-	7.9	5.9	64.4	7.9	-
1.0 percent potassium sorbate in 10 percent brine	1	0.3	-	1.8	28.8	0.1	4.3	3.6	61.0	7.5	8.1	5.1	1.9	55.1	9.5	5.9	6.9	3.7	62.9	3.1	21.3
	2	1.7	-	12.7	26.7	0.5	3.1	2.4	64.1	3.9	22.1	6.9	3.7	56.6	6.3	9.0	7.5	4.3	61.4	7.1	8.8
	3	0.2	-	2.5	17.4	0.1	5.1	4.4	61.0	3.9	15.6	5.3	2.1	61.7	3.5	17.6	6.8	3.8	61.1	6.4	8.8
	4	0.2	-	2.7	22.0	0.1	4.6	3.9	67.9	5.7	11.9	6.0	2.8	63.6	6.7	11.2	8.4	5.2	59.8	5.4	11.0
	5	1.4	-	19.4	25.6	0.6	5.0	4.3	60.0	8.4	7.3	5.8	2.4	59.3	6.3	9.4	6.5	3.3	58.0	5.9	15.5
	6	0.2	-	2.0	27.3	0.1	3.9	3.2	58.7	1.5	19.1	5.1	1.9	59.1	6.7	8.8	8.5	3.3	60.7	5.2	-
Average		0.7	-	6.9	24.6	-	4.3	3.6	62.1	5.0	-	5.7	2.5	59.2	6.3	-	7.0	3.8	60.7	5.2	-
0.1 percent H <sub>2</sub> O <sub>2</sub> and 1.0 percent potassium sorbate in 10 percent brine	1	0.9	-	5.8	24.3	0.2	3.3	2.4	59.0	6.0	9.7	5.0	1.6	60.0	5.9	10.2	8.1	4.7	79.0	7.7	10.3
	2	0.9	-	6.3	29.5	0.2	4.0	3.1	60.9	5.4	11.3	5.0	1.6	57.5	6.9	8.3	9.3	5.9	61.3	5.3	11.6
	3	1.0	-	3.8	24.6	0.1	2.6	1.9	58.1	5.3	11.0	5.0	1.6	62.9	6.2	10.1	6.4	3.0	57.4	4.4	13.0
	4	1.0	-	9.1	28.1	0.3	3.8	2.9	62.5	7.9	12.4	8.0	4.6	62.9	6.2	10.1	6.4	3.0	57.4	4.4	13.0
	5	1.1	-	9.9	24.5	0.4	4.6	3.7	59.5	4.6	12.4	3.4	0.0	59.8	4.8	12.5	6.7	3.3	58.0	4.4	15.5
	6	1.1	-	8.0	29.8	0.3	3.3	2.4	59.3	7.6	7.7	5.9	2.5	57.9	10.5	5.5	-	-	-	-	-
Average		0.9	-	7.2	27.9	-	3.6	2.7	59.6	6.2	-	5.4	2.0	60.0	7.1	-	7.7	4.3	64.1	4.9	-
Type of brine solution		Period 3 (6 weeks)					Period 4 (8 weeks)					Period 5 (10 weeks)					Period 6 (12 weeks)				
		TBA/ value		Moist- ture		Ratio oil moisture: oil	TBA/ value		Moist- ture		Ratio oil moisture: oil	TBA/ value		Moist- ture		Ratio oil moisture: oil	TBA/ value		Moist- ture		Ratio oil moisture: oil
		value	test	value	test		value	test	value	test		value	test								
														..(Percent)..				..(Percent)..			
10 percent brine	1	10.7	7.6	63.3	4.7	13.5	22.4	19.3	60.3	12.8	4.7	9.0	5.9	59.3	5.4	11.0	24.9	23.6	59.1	11.0	5.3
	2	9.7	6.6	60.7	4.0	15.2	21.2	18.1	57.6	15.0	3.8	11.2	8.1	59.7	6.9	8.7	13.9	12.8	57.9	6.7	8.6
	3	7.5	4.4	61.0	3.9	15.6	8.5	5.4	61.2	4.3	14.2	14.3	11.2	61.0	6.7	9.1	12.9	9.8	58.3	8.1	7.2
	4	19.1	16.0	58.8	12.2	4.8	16.0	12.9	59.6	8.5	7.0	7.9	4.8	60.9	4.5	13.5	19.9	15.8	60.1	7.2	8.5
	5	15.2	12.1	58.3	9.6	6.1	10.9	7.8	59.6	8.2	7.5	7.1	4.0	60.2	5.0	12.0	12.5	10.1	58.6	10.1	5.8
	6	9.4	6.3	62.5	6.2	10.1	11.5	9.4	60.6	7.2	6.4	11.6	8.5	61.2	6.0	10.2	10.6	7.5	61.1	6.9	8.9
Average		11.9	6.8	60.8	6.8	-	15.1	12.0	59.8	9.3	-	10.2	7.1	60.4	5.8	-	15.6	12.5	59.6	7.7	-
0.1 percent H <sub>2</sub> O <sub>2</sub> in 10 percent brine	1	9.0	5.0	65.7	4.0	16.4	6.3	2.3	63.9	4.7	13.6	7.3	3.3	62.3	6.7	9.3	4.8	0.8	65.1	2.0	32.4
	2	9.5	5.5	59.2	5.5	10.8	8.9	4.9	60.2	5.6	10.8	10.3	6.3	60.3	11.1	5.4	7.9	3.8	60.8	7.2	8.4
	3	10.4	6.4	62.6	15.7	11.0	7.9	5.9	64.6	3.6	17.9	8.6	4.6	60.8	5.9	10.3	8.4	4.4	62.0	8.2	10.0
	4	10.7	6.7	60.1	6.5	9.2	6.5	2.6	63.5	5.3	8.6	7.0	3.0	60.3	7.7	7.8	11.9	7.9	58.6	10.1	5.8
	5	7.4	3.4	61.2	4.0	18.3	10.8	6.8	48.7	12.7	3.8	4.1	0.1	61.8	3.7	16.7	5.8	1.8	62.8	3.6	17.3
	6	8.9	4.9	59.2	5.8	10.6	9.3	5.3	62.0	6.7	9.3	8.3	4.5	62.4	7.3	8.5	6.0	4.0	60.7	5.3	9.6
Average		9.5	5.3	61.3	5.2	-	8.3	4.3	57.2	6.4	-	7.6	3.6	61.3	7.1	-	7.8	3.8	59.9	5.7	-
1.0 percent potassium sorbate in 10 percent brine	1	9.3	6.1	63.2	6.1	10.4	11.6	8.4	62.2	4.0	15.6	6.1	2.9	62.5	5.6	11.2	8.1	1.9	62.4	2.9	20.1
	2	7.7	4.5	64.0	4.7	13.6	11.7	8.5	59.6	5.1	11.7	9.6	4.6	60.0	6.8	8.8	8.3	2.3	61.7	3.2	19.5
	3	6.7	3.5	58.6	4.7	12.5	11.6	7.5	63.3	4.1	15.4	7.5	4.3	61.0	6.8	9.0	8.0	1.8	62.9	3.7	19.0
	4	5.9	2.7	63.8	2.6	24.5	12.4	9.2	62.7	4.1	15.3	10.9	7.7	60.8	6.6	9.2	7.2	4.0	60.4	6.8	8.9
	5	6.0	2.8	62.2	2.6	23.9	12.0	8.8	61.2	6.2	9.9	8.2	5.0	61.0	5.8	11.1	8.8	5.6	59.3	7.1	8.4
	6	12.2	9.0	59.9	13.6	4.3	11.5	8.5	58.0	6.8	6.7	8.6	3.4	60.3	5.4	11.2	10.0	6.0	58.5	6.3	11.2
Average		8.0	4.8	62.0	5.8	-	11.8	8.6	61.2	5.4	-	8.5	3.3	60.9	6.1	-	8.9	3.7	60.1	4.8	-
0.1 percent H <sub>2</sub> O <sub>2</sub> and 1.0 percent potassium sorbate in 10 percent brine	1	6.5	5.1	57.7	3.5	16.5	14.1	10.7	60.3	7.7	7.8	4.0	2.6	62.8	4.8	8.2	7.4	4.0	60.0	7.7	7.8
	2	6.7	3.3	56.6	3.1	19.2	11.3	7.9	64.2	3.0	21.4	7.4	4.0	60.1	7.3	8.2	8.3	4.9	59.7	7.5	7.9
	3	6.9	3.5	56.3	7.2	7.8	12.5	9.1	58.1	8.4	6.9	5.8	2.4	56.2	9.4	5.9	10.5	7.1	58.7	8.2	7.2
	4	11.2	7.8	57.3	8.5	6.7	15.4	12.0	57.3	10.9	5.3	5.2	1.8	62.5	3.8	16.4	10.7	7.3	70.0	6.2	8.9
	5	6.5	5.1	58.4	8.2	7.1	10.5	7.1	59.0	9.9	6.0	9.4	6.0	62.6	5.0	12.5	4.4	4.0	60.6	3.3	21.9
	6	7.3	5.9	59.9	5.3	11.3	9.1	5.7	59.3	9.2	6.3	6.7	3.3	60.3	4.0	15.1	5.0	1.6	60.3	3.3	18.3
Average		7.5	4.1	58.2	6.0	-	12.2	8.0	59.5	8.2	-	6.8	3.4	60.6	6.1	-	7.7	4.3	63.3	6.4	-
1/Corrected to average moisture content (60.8%).																					
2/Corrected for blank contributed by contents of brining solutions.																					
3/Corrected for blank contributed by contents of brining solutions and smoking process.																					
4/Butylated hydroxy toluene.																					

1/Corrected to average moisture content (60.8%).

2/Corrected for blank contributed by contents of brining solutions.

3/Corrected for blank contributed by contents of brining solutions and smoking process.

4/Butylated hydroxy toluene.

from 1.5 percent to 15.0 percent and averaged 6.4 percent. The TBA values were not corrected to the average oil content.

Thiobarbituric acid is known to form the characteristic red pigment with a number of oxidation products of unsaturated fatty acids (Tarladgis, Watts, and Younathan 1960) and aldehydes from other sources, as well as a characteristic yellow pigment with certain other aldehydes (Patton 1960). Since the smoke deposit on the surface of fish fillets is known to contain a variety of aldehydes (Shewan 1949), it was necessary to ascertain the amount of TBA color that could be attributed to the smoke constituents. For the same reason, fillets that had not been smoked but had been brined were analyzed to determine the effect of the brining solutions on the development of the TBA color. The fillets that were not smoked comprised the negative control and those that were smoked comprised the positive control.

The group of fish comprising the negative control had been treated identically with the smoked fish up to the point where the fish were dried during the smoking process. The negative control group was dried in a laboratory oven for a length of time and at a temperature similar to that used in smoking the fish fillets. The average TBA value of the fish brined in 10-percent salt solution was 0.6; in 0.1 percent butylated hydroxy toluene, 1.5; in 1.0-percent potassium sorbate, 0.7; and in the combination of 1.0-percent butylated hydroxy toluene and 1-percent potassium sorbate, 0.9.

The positive control consisted of six fish from each group, which were analyzed the day immediately following smoking. The average TBA values of the six fish from each group were as follows: control, 2.9; 0.1-percent butylated hydroxy toluene, 2.9; 1.0-percent potassium sorbate, 4.3; and 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate, 3.6. It thus is apparent that when the negative control of each group is subtracted from the positive control of the same group, a certain amount of apparent TBA value is due to substances deposited during the smoking process. The error of the mean of the four groups at the critical 6-week interval ranged from 0.4 (0.1-percent butylated hydroxy toluene) to 1.6 (control) and averaged 0.9. The average TBA value found to be due to the smoking process was 2.5, and since this value exceeded the average error of the mean, it was subtracted from all succeeding TBA values. In addition, the apparent TBA value due to the brining process found in each negative control group was subtracted from subsequent TBA values. The TBA values reported in table 1, therefore, can be considered for the purpose of this paper to be due to an increase in rancidity alone.

In the correlation of the organoleptic scores with the TBA values found, it becomes apparent that the fillets with a TBA value less than 7.8 could be considered as not rancid, and the fillets with TBA value greater than 7.8 could be considered rancid (95-percent confidence level). Fillets with a TBA value of less than 5.0 could be considered good (95-percent confidence level). Those with TBA values ranging from 5.0 to 7.8 could be classified as fair. For the purposes of this experiment, then, fillets with a TBA value ranging from 0.0 to 5.0 were considered good, those ranging from 5.0 to 7.8 were considered fair, and those with values 7.8 and above were considered rancid. The organoleptic tests correlated to a high degree (99-percent confidence level) with the TBA values, indicating that the TBA test for rancidity is reliable in the case of smoked mullet fillets.

After 2 weeks' storage of the smoked fillets, the average TBA value (4.5) of the six fillets in the control group showed them as being in the good class. Within 4 weeks, the average TBA value (7.3) showed these fillets to be fair, whereas after 6 weeks, the fillets had become rancid (8.8).

In the group of fillets brined with the addition of 0.1-percent butylated hydroxy toluene, it was found after 2 weeks of storage that the average TBA value of the fillets was well within the good class (1.6). After storage for 4 weeks, the average TBA value (3.9) showed that the fillets had remained in the good class, and after storage for 6 weeks, the average TBA value (5.3) showed that they had passed into the fair class. The average TBA values showed these fillets as remaining in the upper range of the good class throughout the remainder of the experiment.

In the case of the fillets brined in 1.0-percent potassium sorbate, the average TBA value (2.5) after 2 weeks of storage showed the fillets to be in the good class; after 4 weeks of stor-



age, the average TBA value (3.8) showed the fillets to remain in the good class; and after 6 weeks' storage, the average TBA value (4.8) showed the fillets remaining in the upper range of the good class. Within 8 weeks the average TBA value (8.6) showed the fillets as having passed into the rancid class.

After 2 weeks' storage of the fillets brined in 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate, the average TBA value (2.0) showed the fillets as being in the good class; after 4 weeks' storage, the average TBA value (4.3) showed that the fillets had remained in the good class; and, after 6 weeks' storage, the average TBA value (4.1) showed that the fillets had still remained in the good class. Within 8 weeks, the average TBA value (8.8) showed that the fillets had passed into the rancid class.

### DISCUSSION

A rather marked disappearance of the smoky flavor was noticed by the taste panel after approximately 6 weeks' storage. This disappearance of smoky flavor, due to the slow volatilization or degradation of the smoke flavor components, has been recognized by the commercial industry. The time limit for protection against the development of rancidity has been suggested to be approximately 6 weeks. It can be noted from figure 2 that at approximately 6 weeks, the average TBA value had progressed from the upper range of the good class to the fair group. The treated groups followed a different pattern from that of the nontreated group through approximately the first 6 weeks of storage. From the 6th to the 8th week, the rate of rancidification of the fillets treated with 1.0-percent potassium sorbate and with the combination 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate approached that of the control group, whereas the development of rancidity in the 0.1-percent butylated hydroxy toluene group was retarded.

From a marketing standpoint, 6 weeks appears to be the limit of the shelf life of smoked mullet fillets. The limiting factor here is not the development of mold or rancidity, but the loss of smoky flavor. There is a significant difference between the means of the TBA values of the treated groups and the mean of the control group until the 6th week of storage. No significant difference is noted between the means of the TBA values of the three treated groups, but at the 6th week there is no significant difference between the means of all four groups. It thus seems that in the use of potassium sorbate to retard the development of mold, an additional benefit is secured in sufficiently lengthening the induction period before the development of rancidity to permit the storage of the fillets for the desired market life of 6 weeks.

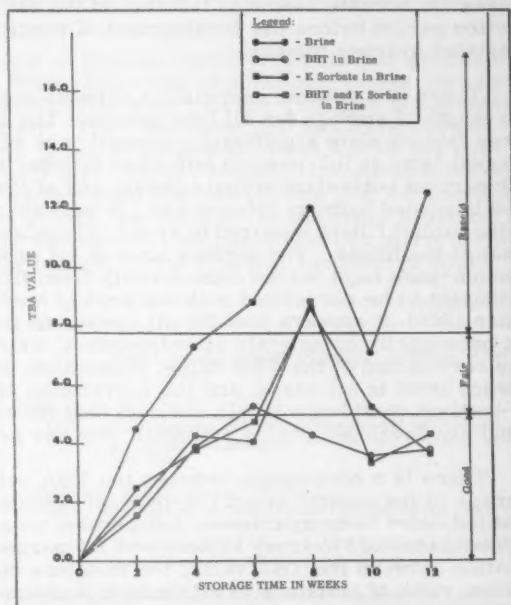


Fig. 2 - Change in TBA values with storage time. The relative position of the average TBA values within the organoleptic classes is shown for the four groups--(1) control, 10-percent brine, (2) 0.1-percent butylated hydroxy toluene in 10-percent brine, (3) 1.0-percent potassium sorbate in 10-percent brine, and (4) 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate in 10-percent brine.

Although the marketable life of the mullet fillets had been determined as 6 weeks, the experiment was carried on for a period of 6 additional weeks to study the effects of the butylated hydroxy toluene, potassium sorbate, and the combination of both on the development of rancidity. It became apparent that butylated hydroxy toluene was the most effective antioxidant, since the rancidity, as indicated by the average TBA values, increased slowly, leveled, and remained the same. From the 6th to the 10th week, the group treated with 1.0-percent potassium sor-

bate and the group treated with 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate exhibited the same pattern of increase and decrease of TBA value as did the control samples. From the 10th to the 12th week, the average TBA value of the control sample increased, whereas the average TBA values of the treated groups decreased or remained the same. These trends could perhaps be due to the production of a compound capable of producing a color with thiobarbituric acid and its subsequent destruction during the rancidification process. The next step in the degradation process could then be seen as being the formation in the control group of another such compound, which is absent from the other groups.

There is little evidence in the literature to suggest that potassium sorbate had previously been considered as being an antioxidant or as having antioxidant properties. It has been suggested that the mechanism of the antimycotic action of potassium sorbate is due to the fact that once deposited on the meat of the fish, it hydrolyzes into sorbic acid. Sorbic acid is an unsaturated fatty acid similar to those formed in the enzymatic dehydrogenation reaction necessary to sustain mold growth, and when present in excess it tends to inhibit this reaction and consequently the growth of the mold (Pfizer 1955). It is possible that (1) by preventing the dehydrogenation of fatty acids in the mullet oil, it prevents the formation of free radicals necessary to the development of rancidity or (2) because of its fatty acid structure, it preferentially selects the available oxygen. The latter course seems the more likely, since the potassium sorbate seems to function in the case of smoked mullet merely to lengthen the induction period before the development of rancidity but is not as effective in this regard as is butylated hydroxy toluene.

There is a definite correlation between the TBA value, the oil content of the fillets, and the length of storage for all four groups. The F values obtained in the correlation of these three factors show significant correlation at 99-percent level in the control group, at the 99-percent level in 0.1-percent butylated hydroxy toluene group, at the 95-percent level in the 1.0-percent potassium sorbate group, and at the 99-percent level in the combination 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate group. The deposits of oil in the mullet fillets appeared in areas, irregular in size and shape, between the skin and the meat of the fillets. The surface area of oil exposed to the limited supply of oxygen in the vacuum-pack bags varied considerably from fillet to fillet. Since the rate of oxidation of oil is thought to be correlated with the area of surface exposed to the air (Polmater, Yu, Sinnhuber 1960), it appears that the oil content of the fillet and the development of rancidity are not necessarily completely interdependent, which would account for the variation in F values. The correlation of the TBA value, oil content, and length of storage above the 95-percent confidence level in all cases, and the correlation of the TBA value and organoleptic tests (at the 99-percent confidence level), indicate that the value of the TBA is dependent on the degree of rancidity developed during a specific storage period.

There is a correlation between the TBA values, the moisture content, and the length of storage in the control group (99-percent confidence level). The groups treated with 0.1-percent butylated hydroxy toluene, 1.0-percent potassium sorbate, and the combination of 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate show no significant correlation between the TBA value, the moisture content, and the length of storage. The TBA values, ratio of moisture to oil content, and time of storage, however, correlate at the 99-percent confidence level for the control group and the 0.1-percent butylated hydroxy toluene group, at the 97-percent confidence level for the 1.0 percent potassium sorbate group and, at the 90-percent confidence level, for the combination 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate group. The increase in correlation that was found by the use of the ratio of moisture to oil content rather than the moisture content alone seems to suggest that there is a relationship between the oil and moisture contents of the fillets and the development of rancidity as evidenced by the TBA value.

#### SUMMARY

Mullet fillets were smoked and divided into groups according to the following four types of brine solution used:



(1) 10-percent brine solution.

(2) 0.1-percent butylated hydroxy toluene in 10-percent brine solution.

(3) 1.0-percent potassium sorbate in 10-percent brine solution.

(4) 0.1-percent butylated hydroxy toluene plus 1.0 percent potassium sorbate in 10-percent brine solution.

The fillets were then stored at 37° F. for 12 weeks, with samples being analyzed for the development of rancidity by the thiobarbituric acid method at intervals of 2 weeks.

Organoleptic tests indicated that smoky flavor gradually disappeared and that after a period of 6 weeks the fillets were considered not suitable for marketing for this reason. For 6 weeks, the butylated hydroxy toluene, potassium sorbate, and combination of both prevented the development of discernible rancidity. After 6 weeks, potassium sorbate and the combination of potassium sorbate and butylated hydroxy toluene allowed an increase in the rate of the development of rancidity, whereas the butylated hydroxy toluene did not. Apparently, it is possible to utilize potassium sorbate both as an antimycotic and as an agent to lengthen the induction period preceding the development of a noticeable rancidity during the marketable life of the smoked mullet fillets.

The TBA value, the oil content, and the length of storage correlate in all four groups at or above the 95-percent confidence level. The TBA values and organoleptic values correlate at the 99-percent confidence level. This correlation indicates that the TBA test is adequate for prediction of rancidity in smoked mullet fillets. The TBA value, the moisture content, and the length of storage correlate in the control group at 99-percent level and do not correlate for the groups treated with 0.1-percent butylated hydroxy toluene, 1.0-percent potassium sorbate, and the combination of 0.1-percent butylated hydroxy toluene and 1.0-percent potassium sorbate. On the other hand, the TBA values, the ratio of the moisture to the oil content, and the time of storage correlate at the 90-percent confidence level or above for all groups. This finding indicates that the moisture content of the fillets is involved in some manner in the development of rancidity.

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# TRENDS AND DEVELOPMENTS

## Alaska

### NONRESIDENT COMMERCIAL FISHERMEN RESTRICTIONS RULED UNCONSTITUTIONAL:

The Emergency Commercial Fishing Measures Act of the 1961 Alaska Legislature allowed the Board of Fish and Game to close fishing districts to nonresident commercial fishermen if it was determined that there would be a poor salmon run in the district involved. A three-man Federal Court in Juneau on February 14 ruled that the Alaska Act is unconstitutional.

The Act was challenged by 17 individuals and 8 packing companies. These sought an injunction prohibiting the Fish and Game Board from enforcing the provisions of the law. In an opinion cited by Circuit Court Judge Homer T. Bone and District Judges Walter H. Hodge and Charles L. Powell, the injunction was granted. The opinion, in part, stated that "Any discrimination must be reasonable to be sustained. Here nothing appears that will in any way justify the application of the prohibition to nonresidents and not to residents."



## California

### MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62N1a and 62N1b Salmon: The midwater trawl operations of the California Department of Fish and Game research vessel Nautilus were continued (January 8-11, 15-19, 1962) in the Carquinez Strait area to capture marked salmon fingerlings on their seaward migration. A nylon midwater trawl with 25-foot square opening was used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each

tow was for 20 minutes. Surface tows were alternated between upstream and downstream and between the north shore, center, and south shore of the channel. Deep tows were confined to the center of the channel.

A total of 95 tows was completed in the Strait during this cruise yielding a catch of 39 king salmon (*Oncorhynchus tshawytscha*) fingerlings, and one king salmon adult; none of which was marked.



180 DAYS  
King Salmon (*Oncorhynchus tshawytscha*)

Other species appearing in the catch consisted mostly of striped bass (*Morone saxatilis*)--1,846 fish, northern anchovy (*Engraulis mordax*)--1,105 fish, Sacramento smelt (*Spirinchus thaleichthys*)--899 fish, American shad (*Alosa sapidissima*)--967 fish, Pacific herring (*Clupea pallasii*)--69 fish, tomcod (*Microgadus proximus*)--56 fish, and King salmon (*Oncorhynchus tshawytscha*)--40 fish.

Note: See *Commercial Fisheries Review*, Feb. 1962 p. 13.

## Cans--Shipments for Fishery Products,

### January-December 1961

Total shipments of metal cans during January-December 1961 amounted to 126,018 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 123,929 tons in the same period of 1960. Canning of fishery products in 1961 was



confined largely to tuna, jack mackerel, Pacific salmon, and Maine sardines. Although the packs of Maine and California sardines, and shrimp were down, greater packs of tuna and salmon more than offset those declines.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



## Federal Purchases of Fishery Products

### DEPARTMENT OF DEFENSE PURCHASES, JANUARY 1962:

**Fresh and Frozen:** For the use of the Armed Forces under the Department of Defense, less fresh and frozen fishery products were purchased in January 1962 by the Defense Subsistence Supply Centers than in December 1961. The drop in the quantity purchased was 6.7 percent and the value was down 10.2 percent. As compared with the same month in 1961, purchases in January 1962 were down 5.7 percent in quantity, but up 7.7 percent in value. Higher prices and the purchase of higher-priced products accounted for the increase in value this January.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, January 1962 with Comparisons

QUANTITY		VALUE	
January		January	
1962	1961	1962	1961
... (1,000 Lbs.) ...		... (\$1,000) ...	
1,751	1,856	996	925

Prices paid for fresh and frozen fishery products by the Department of Defense in January 1962 averaged 56.9 cents a pound, about 7.1 cents a pound more than the 49.8 cents a pound paid in January 1961. The higher average price for purchases this January are attributed to generally higher prices for most fishery products because of light supplies.

**Canned:** Canned tuna was the principal canned fishery product purchased for the use

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, January 1962 with Comparisons

Product	QUANTITY		VALUE	
	January		January	
	1962	1961	1962	1961
... (1,000 Lbs.) ...			... (\$1,000) ...	
Tuna . . . . .	3,113	1,002	1,739	442
Salmon . . . . .	-	-	-	-
Sardine . . . . .	3	21	2	11

of the Armed Forces in January 1962. The amount was the largest ever purchased of canned tuna during a single month.

Note: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than reported above.

(2) The Military Subsistence Supply Agency, effective January 1, 1962, changed its name to Defense Supply Agency. Also, the field offices were redesignated Defense Subsistence Supply Centers.

(3) See *Commercial Fisheries Review*, March 1962 p. 14, February 1962 p. 18.



## Frozen Foods

### NEW INDICATOR RECORDS

#### TIME-TEMPERATURE EXPERIENCE:

A frozen food temperature monitor has been made available by a Los Angeles manufacturer of temperature indicators. It will register environmental temperatures for frozen foods from processor to consumer.

A flexible tab with pressure-sensitized adhesive applicable to most surfaces, the indicator (enveloped in a plastic jacket) has four easily-read windows. The tabs are easily read.

The monitor works on a time-temperature basis, and activates on immersion in tap water for about a minute, at the end of which the activation indicator turns pink. Excess water is removed by shaking, and the tab, for accurate recording, should be placed in cold storage within five minutes.

The tab will stay in place, after its protective backing is removed, until removed.

Time-temperature experience is recorded as on a thermometer. The four windows, initially blue-gray, will turn bright red from the left end at a rate dependent on the temperature, and the red indication, which is irreversible, moves across the tab commensurate with the length of temperature exposure.

Simulating the behavior of frozen food, the red zone will travel the full length of the graduated scale in about one year or more at 0° F., 3 months at 10° F., 2 to 3 weeks at 20° F., and about one day at 30° F. Infinite variations in time-temperature rates are available. (*Frosted Food Field*, January 1962.)



## Gulf Fishery Investigations

### LARGE-SCALE BROWN SHRIMP MARKING EXPERIMENT IN GULF OF MEXICO:

A large-scale brown shrimp marking experiment was started in the northwest Gulf of Mexico in March 1962 by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries. This is part of the Bureau's expanded program of research on the Gulf of Mexico shrimp stocks. Objectives of the experiment will be to secure a reliable index of the rate of fishing, together with information on the movement and growth of shrimp.

## STAINED SHRIMP \$ 2.00 REWARD

SHRIMP HAVE BEEN MARKED WITH BLUE AND GREEN BIOLOGICAL STAINS, OR SMALL GREEN PLASTIC DISKS TO OBTAIN INFORMATION ON MOVEMENTS, GROWTH, AND RATE OF HARVEST. THE DYE ONLY APPEARS ON THE SIDES OF THE HEAD (IN THE GILLS) WHILE THE SMALL PLASTIC DISKS ARE FASTENED IN THE TAIL AS SHOWN IN THE ILLUSTRATION.



A REWARD OF \$2.00 WILL BE PAID FOR STAINED OR TAGGED SHRIMP WHEN RETURNED WITH THE FOLLOWING INFORMATION:

1. Exact place the shrimp was caught.
2. Date the shrimp was caught.

NOTIFY THE GALVESTON BIOLOGICAL LABORATORY, BUREAU OF COMMERCIAL FISHERIES, FORT CROCKETT, GALVESTON, TEXAS, OR CONTACT ANY FISH AND WILDLIFE AGENT AT ANY PORT OF LANDING.

Poster on the shrimp marking project being displayed at Gulf States fishing ports.

The capture, marking, and release of the experimental shrimp was done aboard the exploratory fishing vessel Silver Bay. About 2,000 shrimp marked with green stain and an additional 2,000 shrimp tagged with small green plastic disks attached to the tail were released. The stain injected into shrimp ultimately concentrates in restricted areas of the head. Commercial shrimp catches should be carefully examined for marked or stained shrimp on the vessels as well as in the

processing plants. A second experiment involving similar numbers of shrimp will be started in July 1962. Therefore, stained or tagged shrimp will be appearing in catches during most of 1962.

Of particular value will be the number of marked shrimp subsequently recaptured, detected, and returned. The nature of the experiment requires that the highest possible number of marked specimens be detected and returned for analysis. Posters describing the project and giving information on how marked shrimp recoveries should be disposed of are prominently displayed at shrimp landing ports.

\* \* \* \* \*

### ROLE THAT NORTHERN GULF OF MEXICO CURRENTS PLAY IN MOVEMENT OF YOUNG SHRIMP BEING STUDIED:

As another part of an expanded shrimp research program, the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in February 1962 started a study of water currents in the northern

## REWARD

DRIFT BOTTLES AND SEABED DRIFTERS HAVE BEEN RELEASED AT KNOWN LOCATIONS IN THE GULF OF MEXICO BY SCIENTISTS FROM THE GALVESTON BIOLOGICAL LABORATORY. THESE RELEASES ARE PART OF A STUDY TO DETERMINE THE ROLE THAT WATER CURRENTS PLAY IN THE MOVEMENT OF YOUNG SHRIMP FROM OFF-SHORE SPAWNING GROUNDS TO INSHORE NURSERY GROUNDS.



A REWARD OF 50¢ WILL BE PAID FOR DRIFT BOTTLE ENCLOSURES AND SEABED DRIFTER LABELS WITH FOLLOWING INFORMATION:

1. Exact place the bottle or seabed drifter was found.
2. Date of find.

NOTIFY THE GALVESTON BIOLOGICAL LABORATORY, BUREAU OF COMMERCIAL FISHERIES, FORT CROCKETT, GALVESTON, TEXAS, OR CONTACT ANY FISH AND WILDLIFE AGENT AT ANY PORT OF LANDING.

Replica of poster on drift bottles and seabed drifters being displayed in Gulf States shrimp landing ports.



Gulf of Mexico. The objective will be to determine the role that water currents play in the movement of young shrimp from off-shore spawning grounds to inshore nursery grounds.

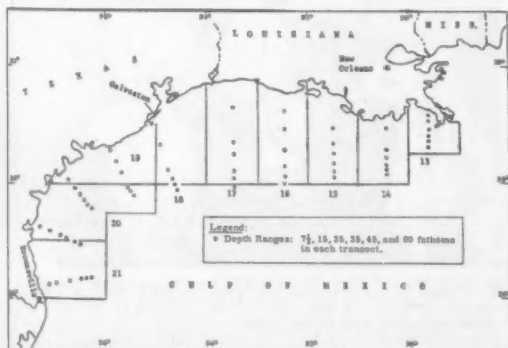
Each month 12 drift bottles and 6 seabed drifters will be released at each of 60 trawling stations located between the Mississippi Delta and Brownsville, Tex. The first seabed drifters and drift bottles were released in the northwestern Gulf of Mexico February 17-March 1, 1962. The drift bottles could be carried by surface currents to any point on the shore of the Gulf of Mexico. The seabed drifters are designed to measure currents on the bottom and will most often be recovered in shrimp trawls.

The success of the study will depend upon accurate reporting of the location and time the drift bottle or seabed drifter is found. Both of these devices are virtually indestructible and may be returned over a long period of time. Posters describing the project and giving information on how recovered drift bottle cards and seabed drifter labels are to be returned are displayed at shrimp landing ports.

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#### SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-17 and "Miss Angela" Cruise MA-11: Bad weather interfered with the shrimp sampling conducted by the M/V Belle of Texas and Miss Angela between February 17-28, 1962. Both of these research vessels are operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico.



Shows the station pattern for cruise BT-17 of the M/V Belle of Texas and cruise MA-11 of the M/V Miss Angela, February 17-28, 1962.

During these cruises good catches of 15-20 count heads-on shrimp were made in the 40-60 fathom range off Terrebonne Bay and in the 20-40 fathom range off Morgan City, La. But the amount caught was not as great as the amount caught in previous cruises in area 19 the latter part of January.

A total of 9 statistical areas were covered. In each area one 3-hour tow was made in each of six depth ranges. A 45-foot shrimp trawl was used. Most of the catches were brown shrimp, although there were some small catches of white shrimp. The largest catch was 47 pounds of brown shrimp, 12-15 count heads on, in area 14 in 40-60 fathoms. The next largest catch was in 20-40 fathoms in area 15, and it consisted of 35 pounds of brown shrimp 15-20 count heads on.



#### Industrial Products

##### U. S. FISH MEAL, OIL, AND SOLUBLES:

Production, January 1962: Preliminary data on U. S. production of fish meal, oil, and solubles for January 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the following table.

	Meal Short Tons	Oil 1,000 Gallons	Solubles Short Tons	Homogenized Short Tons
January 1962:				
East & Gulf Coasts . .	661	35	117	20
West Coast <sup>2/</sup> . . . .	2,010	39	1,452	-
Total . . . . .	2,671	74	1,569	20
January 1961 Total . .	2,723	55	1,064	65

<sup>1/</sup>Does not include crab meal, shrimp meal, and liver oils.  
<sup>2/</sup>Includes Hawaii, American Samoa, and Puerto Rico.

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#### Major Indicators, February 1962:

Item and Period	1962	1961	1960	1959	1958
<u>Production <sup>2/</sup>:</u>					
	..... (Short Tons) .....				
February . . . . .	1/ 2,670	2,071	1,923	2,128	1,842
January . . . . .	-	2,713	2,433	3,095	2,075
December . . . . .	-	12,750	9,185	14,381	14,636
Jan.-Dec. 3/ . . . . .	-	289,039	257,969	275,396	226,239
Jan.-Dec. final totals	-	1/ 290,137	290,137	306,551	248,140

(Table continued on following page.)

Fish Meal Production and Imports (Contd.)					
Item and Period	1962	1961	1960	1959	1958
	(Short Tons) . . . . .				
<b>Imports:</b>					
February . . . . .	1/	14,344	8,081	19,463	11,219
January . . . . .	1/	9,531	8,571	19,700	7,696
December . . . . .	-	23,268	15,564	5,538	8,490
Jan.-Dec. totals . . .	-	217,845	131,561	132,955	100,352

Fish Solubles Production and Imports					
Item and Period	1962	1961	1960	1959	1958
	(Short Tons) . . . . .				
<b>Production 4/:</b>					
February . . . . .	1/	1,502	1,812	2,211	1,133
January . . . . .	1,590	1,129	1,392	1,828	825
December . . . . .	-	4,606	2,897	5,430	6,305
Jan.-Dec. totals . . .	-	109,780	98,929	165,359	130,177
<b>Imports:</b>					
February . . . . .	1/	155	1,875	398	149
January . . . . .	1/	219	214	954	473
December . . . . .	-	472	60	420	5,180
Jan.-Dec. totals . . .	-	6,739	3,174	26,630	14,567

Fish Oil Production and Exports					
Item and Period	1962	1961	1960	1959	1958
	(1,000 Gallons) . . . . .				
<b>Production:</b>					
February . . . . .	1/	44	51	38	49
January . . . . .	75	55	46	64	46
December . . . . .	-	1,488	1,038	1,865	1,839
Jan.-Dec. 3/ 5/ . . .	-	33,471	26,690	24,418	21,957
Jan.-Dec. totals . . .	-	1/	27,886	24,978	22,028
<b>Exports:</b>					
February . . . . .	1/	2,327	3,177	999	1,038
January . . . . .	1/	1,793	276	898	825
December . . . . .	-	1,398	2,108	2,611	333
Jan.-Dec. totals . . .	-	16,331	19,155	19,264	12,539

1/Not available.  
2/Does not include crab, shrimp, and miscellaneous meals.  
3/Preliminary data computed from monthly data.  
4/Includes homogenized fish.  
5/Represents over 95 percent of the total production.  
Note: Data for 1961 are preliminary.

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**Production and Foreign Trade, 1961:** During 1961, meal and scrap production amounted to 289,000 tons--9,200 tons above 1960. The marine animal oil yield totaled 33.5 million gallons--a gain of 5.6 million gallons compared with 1960.

Imports of fish meal in 1961 (218,000 tons) were 66 percent greater than in 1960, and imports of fish solubles (6,739 tons) were up 112 percent. Exports of fish oils and fish-liver oils in 1961 amounted to 122 million pounds (16.3 million gallons)--21.2 million pounds (282,300 gallons) below 1960.

Table 1 - U. S. Production of Fish Meal, Oil, and Solubles, 1961 with Comparative Data

Product	1961 1/	1960
	(Short Tons) . . .	
<b>Fish Meal and Scrap:</b>		
Alewife . . . . .	89	1,092
<b>Herring:</b>		
Alaska . . . . .	3,810	6,103
Maine . . . . .	1,239	2,915
Menhaden 2/ . . . . .	246,990	218,423
Sardine, Pacific . . . . .	2,744	3,508
Tuna and mackerel . . . . .	21,432	26,499
Unclassified . . . . .	12,735	21,288
<b>Total . . . . .</b>	<b>289,039</b>	<b>279,826</b>
<b>Shellfish and marine animal meal and scrap . . . . .</b>	<b>10,000</b>	<b>10,309</b>
<b>Grand total meal and scrap . . . . .</b>	<b>299,039</b>	<b>290,137</b>
<b>Fish solubles . . . . .</b>	<b>98,003</b>	<b>89,377</b>
<b>Homogenized condensed fish . . . . .</b>	<b>11,777</b>	<b>9,552</b>
	(Gallons) . . . . .	
<b>Oil, body:</b>		
Alewife . . . . .	6,900	73,950
<b>Herring:</b>		
Alaska . . . . .	727,517	1,385,218
Maine . . . . .	-	132,973
Menhaden 2/ . . . . .	30,814,537	24,453,736
Sardine, Pacific . . . . .	83,010	160,121
Tuna and mackerel . . . . .	751,590	509,195
Other (including whale) . . . . .	1,087,610	1,137,782
<b>Total oil . . . . .</b>	<b>33,471,164</b>	<b>27,852,975</b>

1/Preliminary data.  
2/Includes a small quantity produced from thread herring.  
Note: Excludes liver oils.

Table 2 - U. S. Foreign Trade in Selected Industrial Products, 1961 with Comparative Data

Product	1961 1/	1960
	(Short Tons) . . .	
<b>Imports:</b>		
Fish meal and scrap . . . . .	217,845	131,561
Fish solubles . . . . .	6,739	3,174
	(Gallons) . . . . .	
Whale oil, sperm (crude and refined) . . . . .	7,807,625	4,836,847
	(Pounds) . . . . .	
<b>Exports:</b>		
Fish and fish-liver oils . . . . .	122,485,721	143,659,471
Whale and sperm oil . . . . .	1,205,674	1,400,714

1/Preliminary data.



At Empire, La., after a day's fishing, the purse-seine net used to fish menhaden is inspected for torn webbing by pulling it from one purse boat to the other.

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**Supply, 1960-61:** As compared with 1960, fish meal production in the United States in 1961 was up 3.2 percent and imports 65.6 percent, which means that the available supply in the United States was 22.6 percent greater. Fish solubles production was up 11 percent and imports were up 112.3 percent, which means that the available supply of fish solubles was up 14 percent.

Table 1 - U.S. Supply of Fish Meal and Solubles, 1961 and 1960

Item	1961 <sup>1/</sup>	1960
	.... (Short Tons) ....	
<b>Fish Meal and Scrap:</b>		
Domestic production:		
Menhaden .....	246,990	218,423
Tuna and mackerel .....	21,432	26,499
Herring, Alaska .....	3,810	6,103
Other .....	26,807	39,112
Total production .....	299,039	290,137
<b>Imports:</b>		
Canada .....	38,218	30,982
Peru .....	151,439	68,156
Chile .....	12,074	21,183
Angola .....	1,543	888
So. Africa Republic .....	19,026	7,073
Other countries .....	1,545	3,278
Total imports .....	217,845	131,561
Available fish meal supply ..	516,884	421,698
<b>Fish Solubles:</b>		
Domestic production <sup>2/</sup> ..	109,780	98,929
<b>Imports:</b>		
Canada .....	1,001	869
Denmark .....	28	1,858
Other countries .....	5,710	447
Total imports .....	6,739	3,174
Available fish solubles supply .....	116,519	102,193

<sup>1/</sup>Preliminary.

<sup>2/</sup>50 percent solids. Includes production of homogenized condensed fish.

From 1960 to 1961 the production of fish oil in the United States rose 20.2 percent, with most of the increase in menhaden.

Table 2 - U.S. Production of Fish Oil, 1961 and 1960

Product	1961 <sup>1/</sup>	1960
	.... (1,000 Gallons) ....	
Menhaden .....	30,815	24,454
Herring, Alaska .....	728	1,385
Tuna and mackerel .....	752	509
Sardine, Pacific .....	83	160
Other .....	1,093	1,345
Total .....	33,471	27,853

<sup>1/</sup>Preliminary.

Note: Does not include fish-liver oil.

United States imports of fish meal were principally from Peru which supplied 69.5 percent of the total, followed by Canada, South Africa Republic, and Chile.

United States exports of fish oil from 1960 to 1961 dropped off 14.7 percent principally because West Germany, the Netherlands, and Sweden bought considerably less. Partially this was offset by greater purchases by Canada, Norway, and other countries.

Table 3 - U.S. Supply of Fish Meal and Solubles, 1951-1961 (Dry-Weight Basis)

Year	U.S. Production <sup>1/</sup>		Imports		Total
	Tons	Percent	Tons	Percent	
1961 <sup>2/</sup> .....	353,695	61.5	*221,215	38.5	*574,910
1960 .....	339,601	71.8	133,148	28.2	472,749
1959 .....	*389,231	72.5	147,392	27.5	536,623
1958 .....	313,228	74.3	108,167	25.7	421,395
1957 .....	325,221	79.0	86,297	21.0	411,518
1956 .....	360,207	79.6	92,089	20.4	452,296
1955 .....	319,962	76.2	99,692	23.8	419,654
1954 .....	314,482	68.1	147,584	31.9	462,066
1953 .....	320,345	70.9	131,473	29.1	451,818
1952 .....	291,885	58.9	203,539	41.1	495,424
1951 .....	260,120	66.9	128,478	33.1	388,598

<sup>1/</sup>Includes homogenized condensed fish.

<sup>2/</sup>Preliminary.

<sup>3/</sup>Imports of meal only. Data not available on imports of solubles.

\* Record.

Note: Wet weight of solubles and homogenized condensed fish have been converted to dry weight by reducing their poundage by one-half.

Table 4 - U.S. Exports of Unclassified Fish Oil, 1961 and 1960

Destination	Total	
	1961	1960
	..... (1,000 Lbs.) ....	
Canada .....	16,935	9,846
Sweden .....	20,641	36,026
Norway .....	31,277	15,914
Netherlands .....	25,586	53,133
West Germany .....	15,590	26,083
Other countries .....	12,457	2,657
Total .....	122,486	143,659



## Jellyfish

### RESEARCH GRANT AWARDED TO UNIVERSITY OF MIAMI:

A grant of \$14,143 has been awarded to the Institute of Marine Science of the University of Miami by the U. S. Public Health Service. It is to be used for continuing research on the Physalia, more commonly known as the Portuguese Man-of-War, a type of jellyfish sometimes found in the surf and on the beaches of Florida.

The research on this animal has been going on for four years, during which much has been learned about the structure of the animal, how it survives, and its mode of living. For example, its float has been found to contain carbon monoxide, unique in animals of either the sea or land.

The poison contained in the tentacles, it has been ascertained, is a protein similar to cobra venom and nearly as poisonous. This

accounts for serious stings received by ocean bathers when they come in contact with the *Physalia*.

It is not yet known just how the *Physalia* makes either the poison or the carbon monoxide. These questions are now being studied along with attempts to find a remedy for the sting. (February 1962 news release from Institute of Marine Science.)



## Maine Sardines

### EXTENDED CANNING SEASON NOT PRODUCING:

A continued scarcity of fish has resulted in a virtual total failure as of mid-February 1962 of Maine's extended sardine canning season. With only 6,900 cases packed December 1 to February 9, even the most optimistic canners, fishermen, and factory workers are wondering if they now won't have to wait for the usual spring runs of fish. (The normal season ended on December 1, 1961.) There were high hopes for sizable catches during the favorable February tides, but these did not materialize.

The bulk of the fish packed was produced by one Portland plant during the first two weeks of December and the only other action has been occasional small catches in eastern Washington County waters. Even these few fish have generally been too small to can profitably and most of them have gone to the fish meal and pearl essence plants.

Meanwhile the meager 679,000 cases produced during the regular 1961 season have been practically all sold and the shortage in the markets is getting acute. The average annual pack for the previous 20 years was 2.2 million cases.

The industry is now comparing the present situation with the summer of 1938 and winter of 1939 when the last critical fish shortage occurred. Conditions were very similar but corrected themselves during the spring and summer of 1939 when a total of 2,175,000 cases was packed.

Just before the regular April 15 to December 1 legal canning season closed last fall, the Maine Legislature, in Special Session, granted the canners an extension to

permit sardine canning on a year-around basis until January 1, 1963.

This action was taken in anticipation of a sizable winter pack which would provide much needed employment in the coastal areas and permit the canners to replenish their inventories and keep their customers supplied.

Although there is great disappointment in the industry over the failure of winter fishing for the first half of the period, all concerned figure that the odds are with 90 years of history in regards to the 1962 summer pack. "We cannot find any record of two really poor fish years in a row since the industry was founded in 1872," the Executive Secretary of the Maine Sardine Council stated.



## Marketing

### EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SPRING 1962:

The United States domestic catch of fish and shellfish during 1961 amounted to 5.1 billion pounds—about 200 million pounds more than in 1960. These landings had a value to fishermen of \$364 million, about \$10 million more than in the previous year. Fish and shellfish for human consumption comprised about 2.5 billion pounds of total catch. The remainder was used for the manufacture of industrial products, bait, and animal food.



At a plant in Tampa, Fla., hand labor is used in peeling shrimp in order to produce a butterfly-fantailed breaded shrimp product.

During the spring months of 1962, per capita consumption of fishery products probably will increase slightly, and prices will remain moderately high. Retail prices for fishery products advanced during 1961, and are expected to remain at that high level until summer.

Supplies of fish and shellfish during the early spring months should be about the same as last year. Although

frozen inventories are presently at a low level, many fisheries will resume full operations with the beginning of spring weather.

Imports of edible fishery products into the United States during 1961 were greater than those of 1960. Continued high imports are expected early in 1962, especially for groundfish fillets and blocks, canned tuna, and shrimp. Exports of edible fishery products during 1961 were by far the lowest on record and prospects for increased shipments during the early months of 1962 are not bright.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's February 1962 issue of *The National Food Situation* (NFS-89).



## Great Lakes Fisheries

### Exploration and Gear Research

#### EXPLORATORY FISHING IN SOUTHERN LAKE MICHIGAN:

M/V "Kaho" Cruise 1: The U. S. Bureau of Commercial Fisheries exploratory fishing and gear research vessel Kaho was scheduled to begin its exploratory fishing operations on February 20, 1962, in the southern half of Lake Michigan from Ludington, Mich., on the eastern shore to Two Rivers, Wis., on the western shore.

The general plan of Cruise 1 of the Kaho was to conduct exploratory trawl fishing operations at various depths and areas in southern Lake Michigan at intervals of approximately 3 weeks.

The primary purpose of the cruise was to determine the location, bathymetric distribution, relative abundance, and seasonal availability of various species of fish to standard otter trawls. The information obtained was to help Lake Michigan fishermen determine the most productive trawling grounds.

The secondary purpose of the cruise was to collect data on the physical characteristics of the 154-fathom deep waters of Lake Michigan north of Ludington, Mich., in cooperation with the U. S. Department of Health, Education, and Welfare. This program was designed to determine the extent and effects of domestic and industrial wastes coming into Lake Michigan--both now and in the future.

Echo-sounding equipment was to be used to survey the bottom and detect subsurface fish concentrations. A 50-foot (headrope) Gulf of Mexico-type otter-trawl net was to be towed in representative areas to assess the commercial trawling potential. Bathymograph casts and water samples were to be taken at the 154-fathom depth.

Note: See *Commercial Fisheries Review*, January 1962 p. 17.



## North Atlantic Fisheries Exploration and Gear Research

### MIDWATER TRAWLING OPERATIONS START OFF NEW ENGLAND FOR 1962:

M/V "Delaware" Cruise 62-1 (Jan. 22-31, Feb. 6-15, 1962): Pelagic fishery explorations during the latter part of January and the first part of February 1962 were continued by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. Principal effort was devoted to scouting with sonic sounding and scanning equipment to locate schools of fish on or off the bottom.

The cruise was divided into two parts. During the first part most of the activity, which extended over a 10-day period, was spent along the edge of the continental shelf between the depths of 40 and 120 fathoms and in the areas bracketed by the Nantucket Light Vessel and Hudson Canyon.

Much of the time was spent close to known scup or porgy and butterfish fishing areas. Virtually no fish schools were seen in midwater (on echo-sounding equipment). The only indications of midwater life observed were sampled with a midwater trawl and proved to be Euphausiids (small shrimp-like crustaceans) and small deep-sea fish.

It is significant that commercial vessels working in the same area as the Delaware during this portion of the cruise had difficulty in obtaining good catches. The low availability of fish in midwater and typical winter weather conditions both contributed to poor catches with midwater trawl equipment.

During the second part of the cruise, operations were conducted in the Gulf of Maine

where effort was concentrated on a search for sardine-size herring. Areas scouted included the coast of Maine from Portland to West Quoddy Head and selected offshore areas. Coastal searches were made in depths between 20 and 60 fathoms. Offshore scouting was done over Grand Manan Bank and around Mt. Desert Rock. Otter trawl tows were made in a deeper-water area (80-110 fms.) 20 miles SW. by S. of Matinicus Rock near Toothaker Ridge.

Fish traces were found in an area approximately  $7\frac{1}{2}$  miles south of Cape Small in depths of 45 to 48 fathoms. On February 7 the fish traces were searched within 10 fathoms of the bottom during daylight hours and appeared to be concentrated into groups which were variously distributed along the bottom; they varied from widely separated to thickly concentrated groupings. After dark, the fish were found to have risen to within 3 to 5 fathoms of the surface. The thickness of the schools varied from 2 to 12 fathoms.

Two 1-hour sets were made on those soundings with a midwater trawl. The trawl was capable of catching herring but not specifically designed for catching very small fish. Six bushels of herring averaging 5 inches in total length were retained in the small-mesh cod-end in the first tow and one bushel was taken in the second. The largest school sounded in that area was approximately 2 miles in length. Another smaller, less dense school of approximately  $1\frac{1}{4}$  miles length was sounded 3 miles to the eastward of the first school.

A shallow surface school of small-herring was observed during the night of February 13 in a position approximately 2 miles SW. of Matinicus Rock. These fish could not be detected with sounding gear because apparently none of them were deep enough to pass under the vessel.

No further significant midwater or off-the-bottom traces of sardines were found. Four out of five bottom tows in the Toothaker Ridge area produced small quantities of sardines, although none of those had been detected on the sonic equipment. In general, the sardines were about the size of the inshore herring, although taken from deeper water. Their average length was about 5 inches and their length range was from about 4 to 7 inches.

Only one large "sea herring" was taken and that was during a bottom tow at 80 fathoms depth.

Note: See Commercial Fisheries Review, Dec. 1961 p. 41.

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#### NEW VESSEL PLANNED TO REPLACE M/V "DELAWARE":

Work on designing a new stern trawler for year-round exploratory fishery research in the Northwest Atlantic by the U. S. Bureau of Commercial Fisheries will begin at once, the Department of the Interior reported today.

The vessel will replace the 24-year-old Delaware which now is used as an exploratory fishing and gear research vessel by the Bureau. The new vessel, 125 to 150 feet long, will be designed as a more efficient exploratory craft and will, like the Delaware, be based at Gloucester, Mass.

George G. Sharp, Inc., marine designers of New York City, has been awarded a contract for preparing plans and specifications for the vessel.

The deck and gear arrangement will feature a mechanical and, as far as possible, automated method of handling otter-trawl fishing gear. It will also be adaptable to methods of fishing other than trawling, such as long-lining, gill-netting, and purse-seining.

The deckhouse and the below-deck arrangements will conform to the specialized requirements of marine researchers. Adequate space and facilities are to be provided for fish-finding devices and other electronic equipment. Laboratories and living accommodations for as many as seven scientists will be provided on the main-deck and second-deck areas.

Design of the vessel is expected to require approximately eight months. Construction will begin shortly thereafter.



#### North Pacific Exploratory Fishery Program

##### SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER:

M/V "John N. Cobb" Cruise 53: The U.S. Bureau of Commercial Fisheries announced



a cruise (February 26-March 23, 1962) of its exploratory fishing and gear research vessel John N. Cobb to sample marine bottom fauna in waters south of the Astoria Canyon and west-southwest of Tillamook Head, Oreg., in 50 to approximately 700 fathoms of water and west of Destruction Island between Cape Elizabeth and Umatilla.

The primary purposes of the cruise were (1) to monitor marine fauna at stations along a previously established track line off the mouth of the Columbia River and to collect samples for radiological analysis by the Laboratory of Radiation Biology at the University of Washington, and (2) to locate stations west of Destruction Island suitable for future re-surveying. The cruise would provide information on the seasonal distribution and abundance of demersal fish and invertebrates in the survey areas, as well as basic information on latent marine resources. Records were to be maintained of oceanographic and meteorological conditions as well as bottom topography. Biologists from the Oregon Fish Commission expected to tag Dover sole caught in deep water to study their rates of growth and migratory habits. The National Museum was to collect rare species of fish during the survey.

A standard otter trawl net was to be towed for one hour to sample marine life at each trawlable station. Sonic equipment was to be used as an aid in locating trawlable bottom.

Note: See *Commercial Fisheries Review*, Sept. 1961 p. 35, Nov. 1961 p. 26.

## North Pacific Fisheries Investigations

### BUREAU GETS NEW RESEARCH VESSEL:

Permission was received late in 1961 to proceed with the procurement of a 175-foot vessel (coastal refrigerator and supplytype) for high-seas research in the North Pacific Ocean. As of December 28, 1961, the vessel was officially released by the U. S. Navy to the U. S. Bureau of Commercial Fisheries.

In conjunction with the Bureau's new vessel, continued charter of private vessels is contemplated. A contract has been signed with the owners of the *Bertha Ann* for a 75-day high seas research cruise in the North Pacific.

## Oceanography

### NEW OCEAN SURVEY TO COVER AREA NEAR BAHAMA ISLANDS:

On the first leg of a six-months oceanographic survey of the area between the "Sargasso Sea," Virginia Capes, and Puerto Rico, the Survey ship *Explorer* sailed from Norfolk, Va., on February 19, 1962, the Coast and Geodetic Survey, U. S. Department of Commerce, announced in February. The objective of the project for 1962 is to probe more than 250,000 square miles of the dangerous "Hurricane Belt" north of Puerto Rico and east of the Bahama Islands before the autumn storms arrive.



Fig. 1 - Coast and Geodetic Survey ship *Explorer*.

Plans call for 52 oceanographic probes to study the physical, chemical, geological, and magnetic aspects of the ocean environment. One "station" will be directly over the 30,000-foot Bronson Deep, believed to be the greatest depth in the Atlantic Ocean.

The Agency's oceanographers are confident that this systematic survey will produce an unprecedented assortment of data on currents, bottom topography, sound velocity structure, water chemistry, and the earth's magnetic field. At 23 of the oceanographic "stations," bottom sediment cores will be taken and preserved in plastic tubes for future examination.

The Coast and Geodetic Survey has a long record of oceanographic investigations along the continental shelf of the United States and in the waters around Puerto Rico. In the 1870's, the Survey made a thorough

study of the complex Gulf Stream. But the work planned this year is the first effort to methodically comb the vast area joining the western boundary of the "Sargasso Sea." Here the brown Sargasso weed is found floating in great masses in what oceanographers term a region virtually devoid of major ocean currents.



Fig. 2 - Preparing Nansen bottle for lowering to record temperature and test the salinity of sea water.

The 220-foot Explorer carries a complement of 12 officers, 77 crewmen, and additional scientific personnel. The ship is outfitted with precision depth-recorders, a Loran C navigational control system, and a maze of oceanographic equipment for taking water temperatures, salinity, and water samples; measuring weather and sea swell conditions; and recording variations in the earth's magnetic field. A torpedo-shaped instrument known as the Varion Proton Magnetometer is towed about 500 feet astern at all times while the ship is under way.

In an effort to learn more about ocean currents, the Explorer will release more than 5,000 drift bottles during the cruise. These will drift freely with the current--perhaps finding their way to the beaches of



Fig. 3 - Tossing a drift bottle over the side of the Explorer.

the United States, Great Britain, or France or remaining adrift at sea for years. A card, tucked neatly inside the "pop"-sized bottle, asks the finder to mark on it the time and place he found the bottle and to send the card to the U. S. Coast and Geodetic Survey headquarters in Washington, D. C.

The oceanographic work will be accomplished during the passage of the Explorer from her home port of Norfolk to the 1962 working area around the Island of Puerto Rico. Throughout the season, the ship will remain in the coastal waters of Puerto Rico, undertaking hydrographic work for six-week periods, and then return to Norfolk for about two weeks. This should permit about six deep-sea sounding lines to be run about 60 miles apart. Eventually, the line spacing will be reduced to 10 miles to meet ocean survey specifications. New hydrographic work around Puerto Rico has been scheduled this year as part of the Coast and Geodetic Survey's basic nautical charting program.

Oceanographic studies such as the one to be undertaken by the Explorer during



1962 are becoming increasingly vital to the nation's commerce and defense. Part of the area to be probed, east of the Bahama Islands, is part of the Cape Canaveral down-range tracking area.

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#### GRANT FOR SERIAL ATLAS OF NORTH ATLANTIC MARINE ENVIRONMENT:

A grant of \$47,660 from the National Science Foundation for support of a Serial Atlas of the Marine Environment of the North Atlantic was received by the American Geographical Society. The atlas project is being undertaken in cooperation with other scientific institutions here and abroad. The atlas will be issued as individual folios, in much the same way that a journal is published. Unlike a journal, however, it will have no regular publication dates. The announcement of the grant was made by the Society on February 22, 1962.

The first folio of the atlas, "Sea Surface Temperature Regime of the Western North Atlantic, 1953-54," is to be published this spring. It consists of 55 maps showing a great volume of surface temperature observations collected by commercial vessels at sea and bringing out detailed, month-to-month patterns of differences in surface temperature. The author is a meteorologist with the U. S. Bureau of Commercial Fisheries.

Maps and preliminary data for three other folios have been submitted. These include a study of the biogeography of the clam *Spisula polynyma* by an employee of the U. S. Bureau of Commercial Fisheries; average temperature at a depth of 200 meters (the depth at which temperatures remain constant throughout the year), by a member of the Woods Hole Oceanographic Institution; and a study of the distribution of more than 130 species of fish found off Georges Bank between Cape Cod and Nova Scotia.

Each folio of the atlas will consist of a map or series of maps dealing with an aspect of oceanography. As the folios grow in number, the atlas is expected to present a comprehensive range of studies in all disciplines dealing with the sea. By pointing up comparisons and patterns and by showing up gaps in knowledge, the atlas may also serve as a guide for future research.

Nineteen base maps, each covering a section of the North Atlantic and Arctic Bas-

sins, have been compiled by the Society. These are issued to scientists, on request, for use as work sheets on which the scientists' own findings are plotted. Each study is evaluated by a panel of experts and the society's cartographers prepare finished maps for publication. More than 200 individual scientists in 20 countries have so far requested one or more of the base maps.

Note: See Commercial Fisheries Review, May 1961 p. 19.



#### Oysters

##### RESEARCH PROGRESS ON MORTALITIES:

Research progress on heavy oyster mortalities that have occurred for the past few years in certain Middle Atlantic areas was summarized at a conference at Solomons, Md., on January 23 and 24, 1962. Forty scientists met at the University of Maryland's Chesapeake Biological Laboratory for their Fourth Annual Conference on this topic. They exchanged ideas and information on the parasites causing the losses. The biologists represented various universities and state and Federal agencies of the Gulf, Atlantic, and Pacific Coasts.

On balance, the present situation was found to be moderately encouraging. No new spread of the MSX oyster blight was reported, the beginnings of recovery were noted in Delaware Bay, and understanding is emerging on the use of waters of low salinity in protecting oyster production. Knowledge of various imported parasites is rapidly increasing. On all of these points and others, however, scientists stated the urgent need for additional knowledge.

Oyster losses along the Middle Atlantic Coast were the major topic of discussion. Biologists from Delaware Bay report improved survival of native oysters in 1961, and suggest that resistant strains may be developing. Total production will, however, remain very low. The Virginia scientists report little change in the mortality pattern. Heavy losses continue and as yet show no indication of decreasing in the lower Chesapeake areas, which have been affected.

The scientists are glad to find that their pooled information indicated no new spread of the blight. Research in the laboratory and in the natural environment supports the idea that low salinity protects oysters from MSX.

The conference yielded much new information about several of the causes of oyster losses and showed rapid advance in knowledge since MSX was discovered in 1957. Detailed discussions were concerned with the possible life history of this organism, the methods of transmitting MSX into oysters, the other parasites which have recently been discovered, and the best methods of developing resistant strains.

At the end of the conference, suggestions were made for future research. These included thorough studies on the distribution of parasites and mortalities, laboratory tests of the effects of low salinity, research on the life histories of parasites, tissue-culture studies of effects of parasites on oyster, further checks to understand the methods by which oysters are infected, and increased attention to the production of resistant strains of oysters.



### Preservation

#### REVIEW OF STUDIES TO EXTEND STORAGE LIFE OF FRESH FISHERY PRODUCTS BY IRRADIATION:

The use of irradiation as a means of extending the storage life of fresh fishery products has been under study jointly by the U. S. Bureau of Commercial Fisheries and the U. S. Atomic Energy Commission. On February 2, 1962, in the Department of Food Technology at the Massachusetts Institute of Technology, Boston, Mass., there was a demonstration of preserving fresh fishery products by irradiation. The occasion of the demonstration was a meeting of a special committee of the National Fisheries Institute designated to review the progress that has been made by the Atomic Energy Commission in its investigation of the use of radiation as a means of locking in and preserving the ocean-fresh flavor of fresh fish and shellfish.

The demonstration consisted of exposing fresh-caught haddock to radiation from a cobalt-60 radiation apparatus.

After this demonstration, the conference group, consisting of scientists and prominent members of the fishing industry, traveled to Gloucester, Mass., where taste tests were conducted, the group enjoying the taste of

haddock and clams that had been irradiated by cobalt-60 rays more than three weeks earlier. The taste tests were conducted at the Bureau's Technological Laboratory in Gloucester.

The Bureau's Technological Laboratory, which conducts studies of the physical and chemical factors that affect the flavor and odor of fish and shellfish, is hopeful that the demonstration of irradiation preservation methods may prove to be a significant milestone of progress in the Bureau's efforts to help the fishing industry provide attractive ocean-fresh fishery products for the American table.

Note: See *Commercial Fisheries Review*, Feb. 1961 p. 25.



### Salmon

#### MORE CHINOOK EGGS TAKEN AT COLUMBIA RIVER HATCHERIES IN 1961:

A total of approximately 65 million eggs from fall chinook or king salmon were taken at the Bureau's Columbia River Fisheries Development Program hatcheries in 1961. This is an increase of about 2,350,000 eggs over the number taken in 1960. Fish hatched and reared from the eggs will be liberated in the Columbia River and its tributaries this spring (1962).

In coordination with the rearing and release of these hatchery fish will be a large-scale program of marking of young fish in order to evaluate hatchery production. Approximately 5,750,000 fingerlings will be marked by excision of fins. The marking will be conducted at all program hatcheries rearing fall chinook salmon, and it is expected that most of the work will be done this spring, just prior to the release of the fish.

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#### STUDY OF HOW JUVENILE KINGS MIGRATING DOWNSTREAM REACT TO LARGE DAMS:

The first phase of a cooperative state and Federal three-year study of how juvenile king salmon migrating downstream react to large reservoirs began the latter part of February 1962 when 750,000 hatched salmon were released in a tributary of Shasta Lake. The fish were supplied by the

Coleman National Fish Hatchery and planted by California's Department of Fish and Game.

Primary objective of the study is to find out how large impoundments such as Shasta Lake affect the young salmon's ability to migrate downstream to the ocean. The information is needed to help evaluate the overall effects of proposed large dams on salmon resources in California and other western states.

Fisheries biologists note that getting adult salmon around the proposed dams so they can spawn in upstream tributaries is only half of the problem. They point out the possibility that the young salmon would not negotiate the reservoir to the dam area where they could be bypassed to the river below. This, they note, would either substantially reduce or entirely eliminate valuable salmon runs.

The study is being supported financially by California's Department of Water Resources and the U. S. Fish and Wildlife Service. California's Department of Fish and Game is conducting the study and will be operating sampling nets in Shasta Lake for the next two years.

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#### POND-REARED SILVERS RELEASED INTO THE COLUMBIA RIVER:

Nearly 40,000 yearling silver salmon were liberated into the Columbia River early in March at the conclusion of the Oregon Fish Commission's first season of natural pond-rearing salmon activities at Wahkeena Pond, a 20-acre impoundment bordering the Columbia River highway U. S. 30, a mile west of Multnomah Falls, Multnomah County.

In an experiment to test the feasibility of raising salmon fingerlings in natural ponds without the benefit of artificial feeding, the pond was stocked with 101,000 silver fingerlings in May 1961. During the ensuing months the young fish fed only on insects and other natural foods available in the impoundment.

The Commission in charge of the pond-rearing experiment termed results of the first season's test "most promising." On the basis of the limited experiments in pond-rearing to date, a survival of 30 percent of the fingerlings stocked to the yearling release size is considered good. With 39,900 silvers counted out, the Wahkeena program

has resulted in a 40 percent survival rate. The young salmon average 4 inches in length, about the size of "wild," stream-reared silvers of the same age. Detailed laboratory examination of sample specimens showed the fish to be in excellent physical condition.

Construction of the new fish-rearing lake was financed by Federal funds, made available to the Commission through the provisions of the Columbia River Fisheries Development program. This Federal aid plan is designed to alleviate some of the damaging effects of the Columbia River fisheries due to dam construction on the Columbia River and its tributaries.

Although a small percentage of the fish released during the past few days will return to the Wahkeena outlet this coming fall as "jacks," most of those surviving the rigors of ocean life will return as adult spawners during the fall of 1963.



#### Shrimp

#### UNITED STATES SHRIMP SUPPLY INDICATORS AS OF FEBRUARY 15, 1962:

Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs., Heads-Off) .....					
<b>Total landings, S. Atl. &amp; Gulf States:</b>					
February .....	1/	3,901	3,785	3,227	4,007
January .....	4,500	5,677	5,401	4,310	5,254
January-December .....	-	90,560	141,035	130,859	116,552
<b>Quantity used for canning, Gulf States 2/:</b>					
February .....	1/	98	223	135	52
January .....	470	199	289	308	146
January-December .....	-	15,760	28,594	24,679	26,404
<b>Frozen stocks (end of each month) 3/:</b>					
February .....	1/	37,612	29,063	27,555	16,359
January .....	20,674	37,842	34,332	30,858	17,963
June .....	-	19,416	15,338	19,283	10,664
November .....	-	20,668	37,264	37,334	30,211
<b>Imports 4/:</b>					
February .....	1/	8,932	7,657	7,481	4,466
January .....	1/	12,338	8,596	8,238	5,690
December .....	-	15,442	12,411	10,611	10,447
January-December .....	-	126,282	113,418	106,555	85,393

1/ Not available.

2/ Pounds of headless shrimp determined by multiplying the number of standard cases by 33.

3/ Raw headless only; other shrimp products not included.

4/ Reported by Bureau of the Census. Includes fresh, frozen, canned, dried, and other shrimp products.

Note: Data for 1962 and 1961 are preliminary. January 1962 data estimated from information published in the daily New Orleans Market News Service "Fishery Products Reports."

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#### NUMBER OF GULF OF MEXICO VESSELS TO SHIFT FISHING OPERATIONS TO COLOMBIA:

At least 17 vessels from Louisiana and Alabama early in March 1962 were getting ready to move to South America. Boat owners from Bayou LaBatre, Gulf Shores, and Morgan City, La., were readying a fleet of Gulf shrimp trawlers to move shrimp fishing operations to Colombia.

The shrimp vessels will operate under contract with a Colombian firm. The businessmen making the move said the reason for the move is that "we just can't make it here with these type boats." The boats average 62 to 70 feet in length and are all double-rigged for trawling in the deep waters of the Gulf of Mexico.

The trawlers will each take a skipper and a mate. Each vessel will hire 3 Colombians to make up the crew. The Colombian Government requires each boat to hire 3 Colombians. The vessels will operate out of Buenaventura on the Pacific Coast of Colombia.

"There's been a lot of red tape," the boat owners say, in preparing for the voyage. It has taken more than two months, they report, to get the necessary clearances, working visas, and making other arrangements. The two principal boat owners say the maintenance facilities in Buenaventura are primitive and there are practically no spare parts for engines and equipment. The vessels are even taking extra otter boards because there might be difficulty in replacing them in Colombia.



#### South Atlantic Exploratory Fishery Program

##### EXPLORATORY FISHING FOR ROYAL-RED SHRIMP:

M/V "Silver Bay" Cruise 36 (January 15-February 6, 1962): Assessing the seasonal availability of deep-water royal-red shrimp (*Hymenopenaeus robustus*) and conducting simulated production fishing for that species were the primary objectives of the 23-day cruise of the exploratory fishing vessel Silver Bay of the U. S. Bureau of Commercial Fisheries. The vessel, which operated along the Florida east coast, returned to Brunswick, Ga., on February 6, 1962.



M/V Silver Bay, Bureau exploratory fishing vessel.

A total of 53 drags was made between St. Augustine and Cape Canaveral in the 160-205 fathom depth range. Best catches were made between latitudes 29°59' and 29°42' north in depths ranging from 160-185 fathoms. In that area individual catches ranged up to 350 pounds (heads-off) of 26-30 count (not graded) royal-red shrimp per 3-hour drag. Twenty-five drags in that area from January 16-21 produced a total of 2,725 pounds (heads off) of royal-red shrimp for an average of 450 pounds per day.



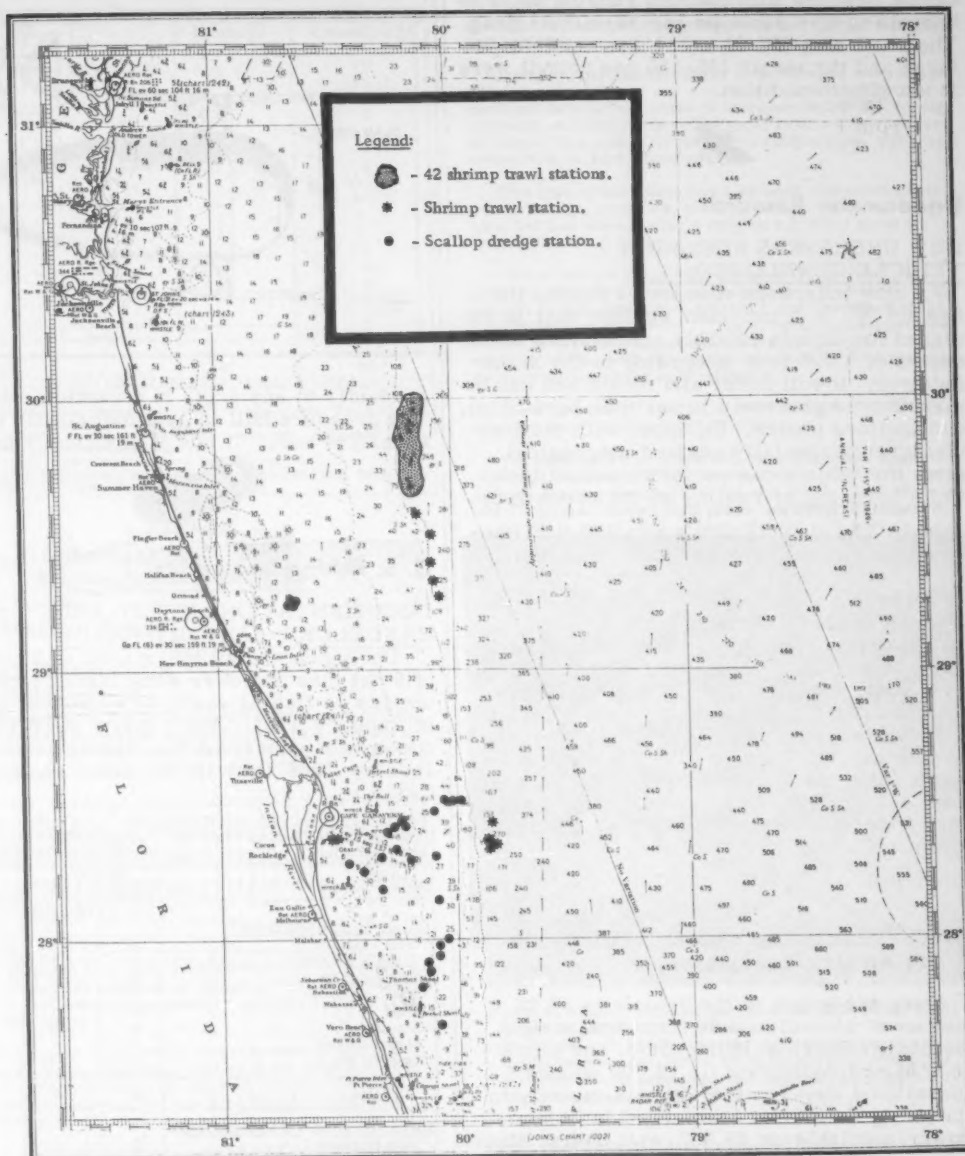
The deep-water royal-red shrimp (*Hymenopenaeus robustus*).

Of the various gear combinations tried, the most satisfactory was a conventionally-rigged 80-foot 4-seam flat trawl with 10-foot doors fished on a 30-fathom bridle.

During the last part of the cruise, deep-water shrimp trawling was demonstrated to and conducted with 4 vessels which started to commercially fish royal-red shrimp in the survey area.

Twenty-seven dredge hauls were made on the Cape Canaveral calico scallop bed to obtain samples for Bureau biologists and technologists and to obtain samples and conduct tests for cooperators. High concentrations of scallops were found off Ormand and





M/V Silver Bay Cruise No. 36 (Jan. 15, to Feb. 6, 1962).



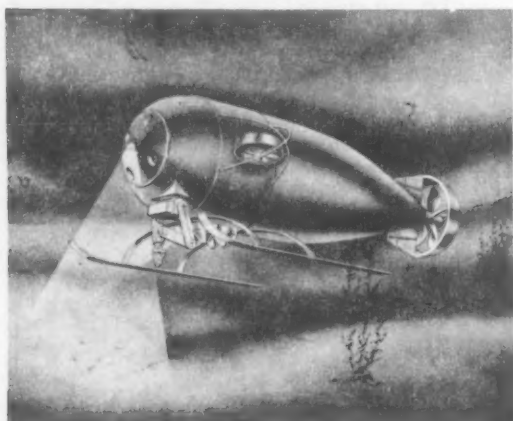
Cocoa Beaches with catches ranging up to 36 bushels of live scallops per 30-minute drag. The shell size (50-65 mm.) was medium to large and the meats (85-100 per pound) were in excellent condition.



## Underwater Research

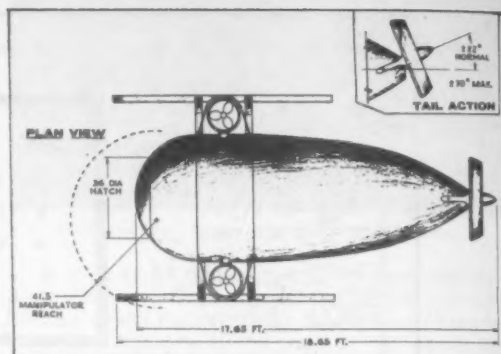
### NEW UNDERSEAS RESEARCH VEHICLE DEVELOPED:

A new underseas research vehicle, the *Seapup IV*, is a two-man vehicle that is designed for simple reliable operation to ocean depths of 6,000 feet, according to the manufacturer. It will hover and rotate and can be maneuvered precisely in vertical, horizontal, and inclined planes. Equipped with the manufacturer's specially adapted mechanical arm, the vehicle can perform manual tasks while hovering or resting on the ocean floor.



*Seapup IV*, a two-man underseas research vehicle.

Over-all length of the vehicle is 18.65 feet; over-all width, 8.00 feet; total weight, including batteries, lifting fluid, and all other standard equipment, is 12,600 pounds; operational speed is 2 to 4 knots; maximum operating time when submerged is 12 hours. Power available is 15,300 watt hours. Main propulsion is provided by a 2.5-hp. D.C. motor driving a 34-inch shrouded propeller; control or lift propulsion is provided by two  $\frac{1}{4}$ -hp. D.C. motors driving two 14-inch shrouded propellers. The main propulsion assembly pivots 70 degrees port or starboard, and thrust from control propulsion assemblies can be directed inde-



pendently to any angle in a vertical plane. The pressure hull is cylindrical with hemispherical ends. It has 4 ports and 1 hatch.



## U. S. Fishing Vessels

### DOCUMENTATIONS ISSUED AND CANCELLED, JANUARY 1962:

During January 1962, a total of 24 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 23 in January 1961. Also, there were 19 more documents cancelled for fishing vessels in January 1962 than in the same month in 1961.

Table 1-U.S. Fishing Vessels/ --Documentations Issued and Cancelled, by Areas, January 1962 with Comparisons			
Area (Home Port)	January		Total 1961
	1962	1961	
	..... (Number) .....		
<b>Issued first documents 1/:</b>			
New England .....	2	3	33
Middle Atlantic .....	-	-	12
Chesapeake .....	4	3	75
South Atlantic .....	2	1	44
Gulf .....	10	11	103
Pacific .....	6	5	149
Great Lakes .....	-	-	13
Puerto Rico .....	-	-	2
<b>Total .....</b>	<b>24</b>	<b>23</b>	<b>430</b>
<b>Removed from documentation 2/:</b>			
New England .....	2	1	20
Middle Atlantic .....	8	2	32
Chesapeake .....	2	6	26
South Atlantic .....	3	5	29
Gulf .....	13	6	104
Pacific .....	16	9	111
Great Lakes .....	5	2	17
Hawaii .....	1	-	-
<b>Total .....</b>	<b>50</b>	<b>31</b>	<b>341</b>

1/ For explanation of footnotes, see table 2.

Table 2-U.S. Fishing Vessels<sup>1/</sup> -- Documents Issued and Cancelled, by Tonnage Groups, January 1962

Gross Tonnage	Issued 2/	Cancelled 3/
	(Number)	(Number)
5-9 .....	6	11
10-19 .....	7	15
20-29 .....	1	7
30-39 .....	3	2
40-49 .....	-	3
50-59 .....	1	1
60-69 .....	2	4
70-79 .....	1	-
80-89 .....	1	-
90-99 .....	1	-
130-139 .....	1	-
140-149 .....	-	1
150-159 .....	-	2
280-289 .....	-	1
300-309 .....	-	1
330-339 .....	-	1
420-429 .....	-	1
Total .....	24	50

<sup>1/</sup>Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

<sup>2/</sup>Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 4 in 1962, 14 in 1961, 1 in 1960, 1 in 1957, 1 in 1956, 1 in 1951, and 2 prior to 1951. Assigned to areas on the basis of their home ports.

<sup>3/</sup>Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



## U. S. Foreign Trade

### CREDIT INSURANCE FOR U. S. EXPORTERS:

Credit insurance for United States exporters, covering both overseas commercial and political risks, became available on February 5, 1962, through the newly-formed Foreign Credit Insurance Association (FCIA).

Details of the program were announced by the president and chairman of the board of the Export-Import Bank of Washington (Eximbank), and the chairman of the governing committee of FCIA.

In cooperation with the Export-Import Bank, the FCIA will insure in a single policy both commercial credit and political risks on short-term transactions resulting from United States export sales to buyers in friendly foreign countries. This new insurance guarantees payment of credits extended by a United States exporter to a foreign buyer. The policy contains coverage and provisions designed to give American exporters the best service of its kind in the world.

This program will provide two important benefits for exporters. First, exporters will be more disposed to extend credit to customers abroad and, second, they will be better able to obtain more financing from commercial banks than if the accounts were not insured.

Foreign credit insurance does not itself provide the financing required by the insured exporter. Such financing is available from commercial banks and other private financial institutions.

FCIA is an unincorporated association comprised at present of 57 capital stock and mutual insurance com-

panies. Membership is open to all responsible and qualified insurance companies. The insurance will be offered through the member insurance companies and their agents and brokers.

Credit or commercial risks to be covered include insolvency of the buyer and protracted default. Also covered will be political risks of inconvertibility of a foreign currency to dollars, cancellation or restriction of export or import licenses, expropriation, confiscation, war, civil commotion or like disturbances.

This type of insurance has long been offered to exporters in foreign countries, mostly through government agencies, but has been available only on a limited basis to United States exporters.

"This concept of meeting the need for an insurance program through private companies is in keeping with the American free enterprise system," the President of the Export-Import Bank said. "The program enables the exporter to purchase his credit insurance through a local agent or broker and eliminates any need for direct negotiations with Eximbank in Washington."

Coverage will be offered in most foreign nations except for the "iron curtain" countries.

Policies issued by FCIA will have Eximbank underwriting 100 percent of the political risks with FCIA and Eximbank sharing the credit risks with FCIA. Last September Congress enacted legislation clarifying Eximbank's authority to enter such an arrangement with private insurance companies. The bank at the same time was empowered to insure export transactions in an amount up to \$1 billion.



Harold F. Linder, president and chairman of the board of the Export-Import Bank of Washington (left) and Thomas H. Bivin, chairman of the governing committee of the Foreign Credit Insurance Association are shown at a press conference at which it was announced that the new Association will begin operation.

The first FCIA policy will cover all United States products which may be legally exported from the United States on terms of 180 days or less. In appropriate cases, this cover may be had for transactions whose terms are up to one year. As soon as practicable, policies will be made available for export transactions whose terms are as long as five years.

In all cases, terms of repayment in the transaction are not to exceed those customary for the goods in international trade.

The premium rates on short-term policies where all export sales are covered will vary according to the terms of payment and the foreign country of the buyer and they will range from 20¢ to \$1.72 per \$100 of gross invoice value.

Political risk coverage of the FCIA short-term policy is as extensive and inclusive as any to be found among insurers of international trade transactions. For example, FCIA treats any external expropriation of or intervention in the buyer's business as a political risk and it is therefore covered to 85 percent of potential loss. Common practice abroad is to consider expropriation and intervention as simple default of payment with coverage of 85 percent of potential loss. Further, coverage against other acts of government such as war and civil war is broader than is usual in delineating the elements of "political risks." In supporting political risk claims, the exporter will be required to submit the "best evidence reasonably available to the insured," that the loss was covered by the policy.

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#### EXPORTS AND RE-EXPORTS OF FROZEN SHRIMP TO JAPAN:

1961: The Japanese continued to buy small quantities of frozen shrimp in December 1961 in spite of high prices and light supplies.

Of the almost 9.5 million pounds of domestic and foreign fresh and frozen shrimp exported and re-exported from the United States during the year 1961, almost 5.8 million pounds were shipped to Japan. A substantial proportion of the shipments to Japan was made from California. A large percentage of the re-exports consisted of shrimp imported into the United States from Mexico.

In 1960, almost 3.8 pounds of frozen shrimp were exported and re-exported from the United States--considerably less than the amount reported in 1961. In 1960, only 364,000 pounds of the total were shipped to Japan.

Type of Product	1961				1960
	Oct.	Nov.	Dec.	Jan.-Dec.	Jan.-Dec.
	(1,000 Lbs.)				
Domestic . . . . .	190	69	122	2,298	259
Foreign . . . . .	130	245	107	3,481	105
Total . . . . .	320	314	229	5,779	364

<sup>1</sup>/Although data appear under the "fresh and frozen shrimp" category, it is believed that all of the exports were frozen shrimp.

Exports and re-exports of shrimp to Japan from California were negligible prior to 1961. But due to a short supply of shrimp in Japan during the first part of 1961 and a strong market, that country purchased substantial quantities of shrimp from the United

States. Most of the Japanese purchases consisted of frozen raw headless brown shrimp, 21-25 shrimp to the pound. But some shipments included 26-30 count, 16-20 count, and under 15 count.

\*\*\*\*\*

**January-November 1961:** The Japanese continued to buy small quantities of frozen shrimp the latter part of 1961 in spite of high prices and light supplies. Of the almost 8.9 million pounds of domestic and foreign fresh and frozen shrimp exported and re-exported from the United States during the first 11 months of 1961, almost 5.6 million pounds were shipped to Japan. A substantial proportion of the shipments to Japan was made from California. A large percentage of the re-exports consisted of shrimp imported into the United States from Mexico.

Type of Product	1961				
	Aug.	Sept.	Oct.	Nov.	Jan.-Nov.
	(1,000 Lbs.)				
Domestic . . . . .	243	17	190	69	2,176
Foreign . . . . .	254	40	130	245	3,374
Total . . . . .	497	57	320	314	5,550

<sup>1</sup>/Although data appear under the "fresh and frozen shrimp" category, it is believed that all of the exports were frozen shrimp.



#### Wholesale Prices

##### EDIBLE FISH AND SHELLFISH, FEBRUARY 1962:

A new reference base--1957-59=100--has been introduced in the wholesale price index computed by the Bureau of Labor Statistics of the U.S. Department of Labor. The new base was introduced with January 1962 indexes. The old base of 1947-49=100 has been superseded by the new index base. The new base has been established by the Office of Statistical Standards of the U.S. Bureau of the Budget for use by all Government statistical agencies. Conversion factors can be applied to the indexes prior to January 1962 in order to obtain index numbers which are comparable to those computed under the 1957-59=100 base (table 1).

Inclement weather throughout the country curtailed fishery landings in New England and the Great Lakes and caused disruption in shipments. Consequently the February 1962 wholesale price index for edible fishery products at 119.7 percent (using the new base of 1957-59=100) was 3.9 percent higher than in the previous month and 11.5 percent higher than in February 1961 (table 2).

From January to February 1962, wholesale prices of all items under the drawn, dressed, or whole finfish subgroup rose 8.1 percent. Landings of haddock at New England ports were light and fresh-water fish production in the Great Lakes was hampered by severe winter conditions. Large fresh drawn haddock ex-vessel prices at Boston rose 37.5 percent, New York City prices for fresh yellow pike from the Great Lakes climbed 30.2 percent, and Chicago prices

Table 1 - Conversion Factors to Change Indexes for Edible Fish and Shellfish from 1947-49=100 Base to New Base of 1957-59=100

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Multiplier 1/
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) . . . . .			0.8054592
<b>Fresh &amp; Frozen Fishery Products:</b> . . . . .			0.7129983
<b>Drawn, Dressed, or Whole Finfish:</b> . . . . .			0.7021239
Haddock, lge., offshore, drawn, fresh . . . . .	Boston	lb.	0.7707129
Halibut, West., 20/80 lbs., drsd., fresh or froz. . . . .	New York	lb.	0.9559214
Salmon, king, lge. & med., drsd., fresh or froz. . . . .	New York	lb.	0.6217294
Whitefish, L. Superior, drawn, fresh . . . . .	Chicago	lb.	0.6019765
Yellow pike, L. Michigan & Huron, md., fresh . . . . .	New York	lb.	0.6984324
<b>Processed, Fresh (Fish &amp; Shellfish):</b> . . . . .			0.7156489
Filletts, haddock, sml., skins on, 20-lb. tins . . . . .	Boston	lb.	0.7136485
Shrimp, lge. (26-30 count), headless, fresh . . . . .	New York	lb.	0.7416869
Oysters, shucked, standards . . . . .	Norfolk	gal.	0.6813278
<b>Processed, Frozen (Fish &amp; Shellfish):</b> . . . . .			0.7853917
Filletts: Flounder, skinless, 1-lb. pkg. . . . .	Boston	lb.	0.9680282
Haddock, sml., skins on, 1-lb. pkg. . . . .	Boston	lb.	0.9337068
Ocean perch, lge., skins on, 1-lb. pkg. . . . .	Boston	lb.	0.8701748
Shrimp, lge. (26-30 count), brown, 5-lb. pkg. . . . .	Chicago	lb.	0.7685246
<b>Canned Fishery Products:</b> . . . . .			0.9861663
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . . . .	Seattle	cs.	0.8353443
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	1.2317799
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs. . . . .	Los Angeles	cs.	0.9670401
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs. . . . .	New York	cs.	1.2053840

1/To convert 1947-49=100 base indexes to 1957-59=100 base, multiply each item by the multiplier indicated.

Table 2 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, February 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			Feb. 1962	Jan. 1962	Feb. 1962	Jan. 1962	Dec. 1961 3/	Feb. 1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) . . . . .					119.7	115.2	115.7	107.4
<b>Fresh &amp; Frozen Fishery Products:</b> . . . . .					118.5	112.4	113.3	106.5
<b>Drawn, Dressed, or Whole Finfish:</b> . . . . .					118.6	109.7	115.0	112.4
Haddock, lge., offshore, drawn, fresh . . . . .	Boston	lb.	.14	.10	107.4	78.1	109.3	77.5
Halibut, West., 20/80 lbs., drsd., fresh or froz. . . . .	New York	lb.	.40	.37	117.3	110.4	105.0	94.6
Salmon, king, lge. & med., drsd., fresh or froz. . . . .	New York	lb.	.86	.86	120.5	120.5	120.5	127.5
Whitefish, L. Superior, drawn, fresh . . . . .	Chicago	lb.	.78	.74	115.7	110.5	94.0	112.0
Yellow pike, L. Michigan & Huron, md., fresh . . . . .	New York	lb.	.74	.57	120.4	92.5	104.0	113.0
<b>Processed, Fresh (Fish &amp; Shellfish):</b> . . . . .					125.4	117.9	115.6	110.9
Filletts, haddock, sml., skins on, 20-lb. tins . . . . .	Boston	lb.	.45	.36	109.3	87.4	76.5	81.4
Shrimp, lge. (26-30 count), headless, fresh . . . . .	New York	lb.	1.05	.94	128.1	110.2	107.2	102.5
Oysters, shucked, standards . . . . .	Norfolk	gal.	7.75	7.88	130.7	132.8	132.8	126.5
<b>Processed, Frozen (Fish &amp; Shellfish):</b> . . . . .					107.7	105.5	105.0	92.8
Filletts: Flounder, skinless, 1-lb. pkg. . . . .	Boston	lb.	.40	.40	100.1	100.1	97.6	98.8
Haddock, sml., skins on, 1-lb. pkg. . . . .	Boston	lb.	.33	.38	96.7	96.7	96.7	105.5
Ocean perch, lge., skins on 1-lb. pkg. . . . .	Boston	lb.	.34	.33	119.2	115.7	108.7	106.9
Shrimp, lge. (26-30 count), brown, 5-lb. pkg. . . . .	Chicago	lb.	.95	.92	112.1	108.5	108.5	83.0
<b>Canned Fishery Products:</b> . . . . .					122.1	120.4	120.2	109.3
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . . . .	Seattle	cs.	28.50	28.00	124.2	122.0	122.0	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs. . . . .	Los Angeles	cs.	5.25	5.15	118.5	116.2	112.9	88.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs. . . . .	New York	cs.	12.81	12.31	164.3	157.9	157.9	109.1

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100. Conversion factors can be applied to the indexes prior to January 1962 in order to obtain index numbers which are comparable to those computed under the 1957-59=100 base.

3/Recomputed to be comparable to 1957-59=100 base indexes.

Note: January 1962 and December 1961 indexes published in *Commercial Fisheries Review*, March 1962 p. 27 and February 1962 p. 48 were on the old base of 1947-49=100.





Unloading a refrigerated trailer loaded with imported frozen fillets at Fulton Market, Chicago, Ill.

for fresh drawn whitefish from Lake Superior were 4.7 percent higher. With cold-storage stocks at a relatively low level, frozen Western halibut prices at New York City also rose 6.3 percent. Compared with a year earlier, February 1962 prices in the subgroup were 5.5 percent higher. Fresh haddock prices at Boston were 38.6 percent higher and Western halibut prices were up 24.0 percent. To offset the increases slightly was the 5.5-percent drop in the prices of frozen Western king salmon due to more being available and a certain amount of consumer resistance to higher prices.

Fresh processed fishery products prices rose 6.4 percent from January to February 1962. Fresh haddock fillet prices at Boston were up 25.1 percent because of the scarcity of fresh haddock. Also, fresh shrimp prices at New York City continued to climb and rose 11.7 percent because of very light landings. More plentiful supplies and a slight drop in demand caused fresh shucked oyster prices at Norfolk to drop 1.6 percent, but this was before the damaging March high tides hit most of the oyster areas on the Atlantic Coast. Compared with February 1961, processed fresh fish and shellfish prices this February were up 13.1 percent. This increase was the result of an increase (34.3 percent) in the price of fresh haddock fillets at Boston and an increase (20.1 percent) in fresh shrimp price at New York City. Both fresh haddock fillets and fresh shrimp were scarce this February.

Prices for processed frozen fish and shellfish in February 1962 were 2.1 percent higher than the previous month



principally because of higher prices for frozen ocean perch fillets (up 3.0 percent) and frozen shrimp at Chicago (up 3.3 percent). Compared to the same month last year, February 1962 prices were up a substantial 16.1 percent. The continued scarcity of frozen shrimp was responsible for the 35.1-percent increase in the Chicago price for frozen shrimp. Lighter supplies of frozen ocean perch fillets caused the price at Boston to rise 11.5 percent. Offsetting these increases were lower prices (down 8.3 percent) for frozen flounder fillets at Boston.

The short supplies of canned fishery products were reflected in higher prices. The index for the canned fishery products subgroup started to rise again (up 1.4 percent) in February 1962, with canned pink salmon prices up 1.8 percent, canned California sardine in tomato sauce prices up 2.0 percent, and canned Maine sardine prices up 4.1 percent. The 1961/62 season for California sardines ended on February 28 with the pack behind the small pack in 1960. Maine sardine stocks continued to dwindle and demand exceeded the available supplies. Canned pink salmon stocks also were at a low level. Canned tuna stocks were moderate and demand was good, but there was no significant change in prices except that some trade discounts were reported in advertised brands. February 1962 prices for canned fishery products were up a substantial 11.7 percent. All products (except for canned salmon) in the subgroup were priced substantially higher this February: canned Maine sardine prices were up 50.6 percent, canned California sardine prices were up 34.7 percent, and canned tuna prices were 10.4 percent higher.



#### SHRIMP IN UNITED STATES FIRST CANNED IN 1867

"Shrimp were first packed in the Gulf of Mexico area. G. W. Dunbar of New Orleans canned shrimp as early as 1867 but had difficulty with blackening and discoloration. He solved this problem in 1875 with the invention of a can lining which aided greatly in overcoming blackening. Shrimp packing soon became the principal fishery canning industry of the Gulf Coast."

--Principles and Methods in the Canning of Fishery Products,  
Research Report No. 7, p. 4,  
U. S. Fish and Wildlife Service



## Fishing Vessel and Gear Developments

### EQUIPMENT NOTE NO. 11--

#### A GREAT LAKES STERN-RAMP TRAWLER:

Gill-net vessels have long been the mainstay of the Great Lakes fishing fleet. The characteristic and unique superstructures of the vessels have been designed to protect their low decks from boarding seas and their crews from bad weather. Early in 1958, owners began converting some of the gill-net vessels to otter trawlers (Gordon and Brouillard 1961). Conversion required removal of much of the protective superstructure from each vessel to make way for the mast, boom, and overhead tackle used in conventional otter trawling operations. Some owners were disturbed at the exposure of decks and crews that resulted.

A method of trawling was needed that could be adapted readily and relatively inexpensively and that would permit operations from gill-net vessels without removing from them the existing superstructures or decking. One such method, suitable for use with many gill-net vessels, has been found in stern-ramp trawling.

In stern-ramp trawling, the net is hauled over a hydraulic stern ramp through an opening in the stern and wound on a drum. No overhead gear is needed, and there is no necessity for removing the superstructure.

### EQUIPMENT AND GEAR

A relatively simple deck arrangement has been developed for gear handling (fig. 1). Deck equipment consists of winch, net drum, net roller, and stern ramp. The winch is mounted amidships, aft of the pilothouse, with its drums facing wing bollards mounted in each bulwark. Trawling warps lead from the drums, through the wing bollards, aft along each side, through towing blocks attached to davits on each stern quarter, and outboard to the trawl doors. Warp ends remain shackled to the trawl doors throughout the net-handling operation.

The net drum, similar in design and construction to those used aboard some Pacific

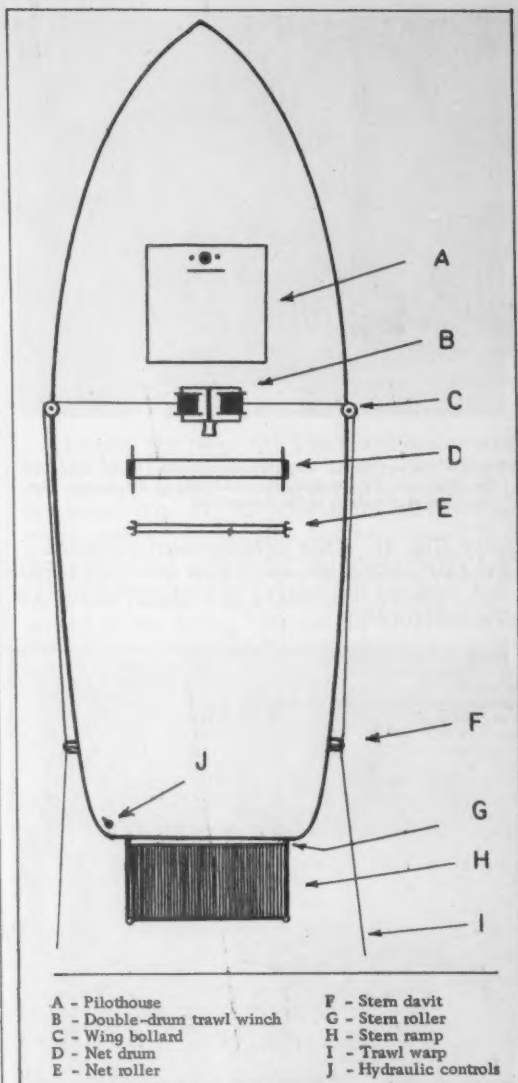


Fig. 1 - Topside view of deck arrangement of a stern-ramp trawler.

Northwest trawl vessels (Alverson 1959, Wathne 1959), is mounted just aft of the winch. The net bridle is attached to the drum by pennants mounted in the center of the drum.

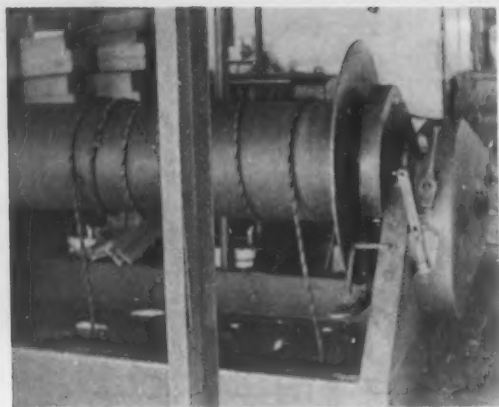


Fig. 2 - The net drum. Pennants are attached to the center of the drum core for attaching the net bridle to the drum. The net roller stanchion is in the foreground.

core (fig. 2). This arrangement provides for fairleading the dandyline gear and trawl and reduces the danger of fouling the net on the stern ramp.

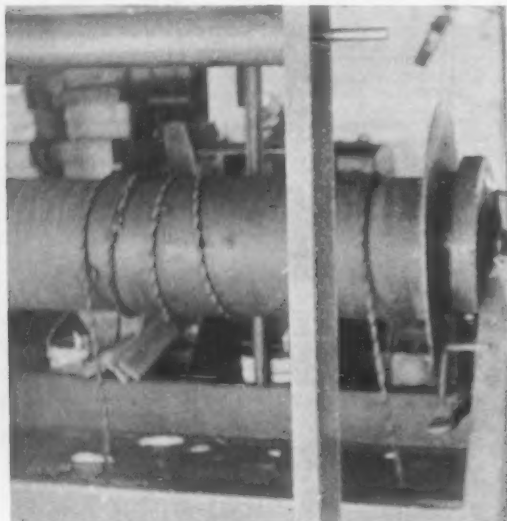


Fig. 3 - The net roller in a raised position. As the cod end of the net passes over the raised roller, the catch is spilled on deck.

The net roller (fig. 3) is used to spill the catch in the limited confines of the enclosed vessel, thereby taking the place of the conventional mast, boom, and overhead tackle.

The roller is installed in channel-iron stanchions directly aft of the winch. Slides and bearing slots cut into the sides of the stanchions (fig. 3) allow manual adjustment of roller height. The roller is lowered during setting and raised to empty the cod end.



Fig. 4 - The stern ramp. Two double-acting hydraulic rams are used to raise and lower the ramp. The roller in the foreground is mounted on top of the stern bulwarks to aid in setting and hauling the net.

The stern ramp (fig. 4) is hinged to the hull directly below the stern opening, outside the bulwarks. Ramp construction is of channel iron, sheet iron, half-round flat stock, and pipe. Two double-acting hydraulic rams are used to raise and lower the ramp. Hydraulic controls for the rams are mounted under the bulwarks near the stern (fig. 5). A 4-inch pipe roller, mounted on the stern rail just above the ramp, reduces friction and gear wear during setting and hauling.



Fig. 5 - Controls for the hydraulic stern ramp rams are located near the stern bulwarks.

Winch and net drums are powered by a mechanical drive. The hydraulic rams are powered by a positive-displacement, belt-driven pump attached to the auxillary engine.

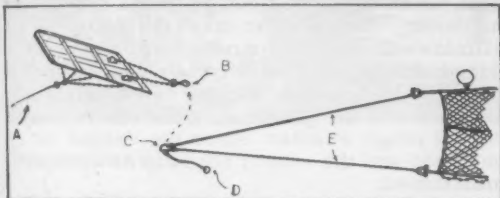


Fig. 6 - The dandyline hookup and arrangement of door connections and warp. (A) Trawling warp (B) Safety hook (C) Bridle ring (D) Pennant idler (E) Legs of dandyline bridle.

Trawl gear used in stern-ramp trawling is the same as that commonly used in the Great Lakes trawl fishery, except that the conventional dandyline hookup described by Knake (1958) has been modified somewhat. The usual 10- to 15-fathom bridles are used between doors and net, but the bridles are connected to the doors with simple chain backstraps that end in heavy-duty safety hooks (fig. 6) rather than with the usual Kelly eyes, stopper links, and shackles.

#### HANDLING THE GEAR

**Setting the Net:** (1) The stern ramp is lowered to the water, and the trawl drum is released. (2) The net unwinds from the drum and passes outboard over the ramp (fig. 7). (3) The bridles follow the net off the drum, but they are held by the drum pennants. (4) Safety hooks attached to the chain backstraps on the trawl doors are attached to the bridles; the pennants are slacked off; and the strain of the bridles is shifted to the doors. (5) The pennants are then unhooked, and the rest of the set is completed following standard otter trawling procedure. (6) When the desired amount of warp is out, the stern ramp is raised from the water to reduce drag.



Fig. 7 - Setting the net. The stern ramp has been lowered to the surface of the water.



Fig. 8 - Hauling the gear. The bridle and net are easily led to the net drum.

**Hauling the Net:** (1) The trawl doors are hauled back to the towing blocks; winch drums are locked; and the stern ramp is lowered to the water (fig. 8). (2) The drum pennants are reattached to the bridles and are wound in on the drum until the strain of the bridles is off the doors. (3) The safety hooks are removed from the bridle rings, and the bridles are wound on the drum. (4) As the net follows the bridle onto the drum (fig. 9), the ramp is

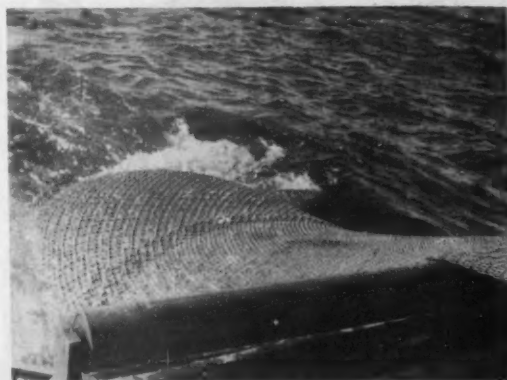


Fig. 9 - The cod end of the net positioned over the ramp prior to being brought aboard.

lowered further until its after end is several feet under the water. (5) When the intermediate section and cod end of the net are directly over the ramp the drum is stopped, and the ramp is raised until it slopes above deck level. (6) The net drum is started again, and the catch in the cod end is hauled aboard (figs. 10, 11). (7) When the intermediate section of the net is over the net roller, the drum is stopped once more, the cod end is



Fig. 10 - The stern ramp is raised so that it slopes above deck level and the catch, in the cod end, is brought aboard.

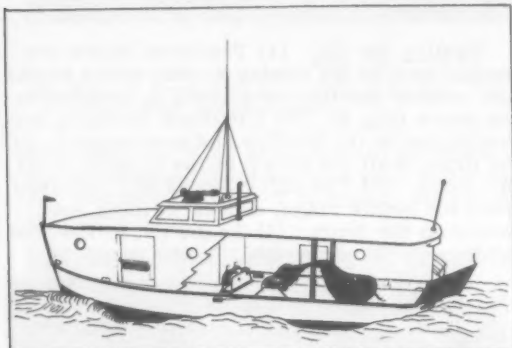


Fig. 11 - Cutaway view of the after deck of a stern ramp trawler showing arrangement of the deck equipment. The net roller is in its raised position.

opened, and the net roller is raised to a height of about 5 feet. (8) Further turns of the drum draw the cod end over the roller, raising it, and spilling the catch on deck.



### ADVANTAGES OF STERN-RAMP TRAWLING

Great Lakes stern-ramp trawling has several advantages over conventional trawling methods: The need for mast and boom is eliminated; rigging for net handling is reduced; the net and catch can be handled rapidly with little labor, for the catch need not be split; and the gear can be handled safely during rough weather, since the vessel is enclosed and the vessel headway is always maintained.

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Note: Appreciation is extended to Capt. William Kunesh of the stern-ramp trawler *Avis J.*, for providing the opportunity to photograph and observe stern-ramp trawling procedures.

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# FOREIGN

## International

### INTERNATIONAL PACIFIC HALIBUT COMMISSION

#### NORTH PACIFIC HALIBUT REGULATIONS FOR 1962:

Fishing for halibut will begin May 9 (at 6 p.m.) in all North Pacific areas (areas 1, 2, and 3A) except in Bering Sea (Area 3B North) and waters west of the Shumagin Islands (Area 3B South), according to the recommendation of the International Pacific Halibut Commission to the Governments of the United States and Canada for the 1962 fishing season.

March 28 was the opening date for fishing in Area 3B North and April 19 the opening date in Area 3B South. This year fishing began earlier than last year in all areas. (Last year all areas were opened to fishing May 10 except for Area 3B North which opened April 10 and Area 3B South which opened April 25.)

Fishing areas: Area 1--south of Willapa Bay, Washington; Area 2--between Willapa Bay and Cape Spencer, Alaska; Area 3A--between Cape Spencer and Shumagin Islands; Area 3B South--waters west of Area 3A, not including Bering Sea; Area 3B North--waters in Bering Sea. The only change in areas from 1961 is that the waters south of Willapa Bay, hitherto divided into Areas 1A and 1B, is treated as a single area, Area 1.

The opening and closing hours of the various regulatory areas is 6 p.m. Pacific standard time of the date indicated. (Last year, 6 a.m.)

In Area 1 the fishing season, with no catch limit, shall terminate at the same time as that in Area 2. (Last year when this consisted of two areas, that part designated Area 1A was open to fishing to October 1 or to the date on which Area 3A closed, whichever was later.)

In Area 2 the fishing season shall terminate at the time of attainment of the catch limit of 28 million pounds (the quota is the same as last year).

In Area 3A the fishing season shall terminate at the time of attainment of the catch limit of 33 million pounds (the quota is the same as last year).

In Area 3B South the fishing season, with no catch limit, shall end September 30 or at the closure of Area 3A, whichever is the later (the closing date last year was October 1).

In Area 3B North the fishing season, with no catch limit, shall end October 15 or at the closure of Area 3A, whichever is later (the closing date last year was October 1.)

The Commission will provide 10 days notice of closure of Areas 1 and 2, and 18 days notice of the closure of Area 3A.

This year the Commission's regulations provide that any fishing vessel leaving Area 3B South, and having halibut aboard, must have its chute and gurdy (gear used for hauling in the line and boating the halibut) sealed before leaving Area 3B South. Authorized Customs or Fishery Officers will apply the seals, and the seals will be removed only by authorized officers at the port where the vessel's fare is to be landed.

The Commission's recommendations for the 1962 season were announced on February 16 at the conclusion of its thirty-eighth annual meeting at its headquarters at the University of Washington, Seattle, Wash., with Chairman William M. Sprules of Ottawa, Ontario, presiding.

Other members of the Commission are Mattias Madsen, William A. Bates, and Harold E. Crowther, representing the United States; and Harold S. Helland and Richard Nelson, representing Canada.

The Halibut Commission is responsible to Canada and the United States for the investigation and regulation of the halibut fishery of the northern Pacific Ocean and Bering Sea. Its specific function is the development of the stocks of halibut to levels that will permit the maximum sustained yield, and its decisions regarding regulation are based upon the findings of its scientific staff.

During the past 30 years of Commission management, there has been progressive improvement of the stocks and increase in annual yield. The annual catch, which had declined to 44 million pounds in 1931 the year before regulation, has averaged more than 71 million pounds during each of the past three years. The 1961 catch of about 70 million pounds was worth over \$14.5 million ex-vessel.

The Commission reviewed the past year's fishery and the research conducted by its scientific staff. It also dealt with administrative matters and approved a research program for 1962. In the course of its sessions the Commission conferred not only with its staff, but also with representatives of the halibut fishermen's, vessel owners', and dealer's organizations. The scientific findings and all suggestions for regulations in 1962 were discussed at meetings.

The Commission also announced that the 1963 annual meeting will take place at Petersburg, Alaska, commencing January 29, 1963.

Harold E. Crowther of Washington, D. C., was elected Chairman and Dr. William M. Sprules of Ottawa, Ontario, Vice Chairman for the ensuing year.

Since in the past the United States and Canadian Governments have accepted the recommendations of the Commission without changes, it is fairly certain the 1962 regulations as recommended by the Commission will be approved by the two Governments.

### INTERNATIONAL ASSOCIATION OF FISH MEAL MANUFACTURERS

#### REPORT BY U. S. OBSERVER OF SECOND ANNUAL CONFERENCE:

The second annual conference of the International Association of Fish Meal Manufacturers, held in Lisbon, Portugal, October 25-27, 1961, was attended by an observer from the United States--a technologist of the U. S. Bureau of Commercial Fisheries. This is a report of the conference by that observer.



## International (Contd.):

Much of the subject matter fell within the responsibilities of the Scientific Subcommittee of the Association. This report summarizes briefly the technical matters discussed at those committee meetings and also refers to discussions held in the Main Session in regard to fish flour.

There was considerable discussion about feed formulation and how the electronic computer has brought about changes in preparing these formulations. Those concerned with preparing formulas for feed mixes have often been inclined to make few changes in their formulas but now that computers are becoming more readily available, in some countries at least and particularly in the United States, the feed formulations may be modified at fairly frequent intervals to take advantage of price changes of ingredients and other factors favorable to the use of particular feed components in the mixes. It was brought out that much more must be known about fish meal quality and composition before consistently reliable results can be obtained from electronic computers. The answer given by the computer is no better than the information fed into it. There is still a great deal to be learned about processing variables; availability of amino acids in the meal; effect of storage conditions on fish meal; variability in the chemical makeup of the meals; and other factors that will effect the quality of fish meal and determine the extent of its use in feed formulations. Fish meal is still not a standardized product, whereas some of its competitors, as for example soymeal, have been reasonably well standardized. Because of this, some fish meal may not show up too well in computer and feed formulations. It was suggested and generally agreed upon that a team should be set up to coordinate work that is being done on computer formulating and to examine available information obtained from various laboratories throughout the world in order to ascertain what additional data might be needed regarding composition of fish meal and other ingredients going into formulations.

There was a strong feeling that quality of product will be an even more essential factor in fish meal sales in the not-too-distant future, which indicates that consideration may soon have to be given to the development of quality standards for fish meal. However, since it is necessary to have a reliable means

for determining and expressing quality, and this is done in many instances by chemical analysis, various analytical methods must be screened for accuracy as applied to fish meal, and suitable ones must then be agreed upon for use as standard methods of analysis.

In a discussion in the Subcommittee on analytical methods for use with fish meal, it was brought out that the first phase of such a project, which dealt with obtaining information regarding the various methods of analyses used in member countries, has been almost completed. The next step would be to make a study of the methods that appeared to be the most acceptable and then to conduct cooperative laboratory tests to determine the reliability of the methods for particular needs. It was mentioned that the Torrey Research Station in Scotland could conduct studies on pepsin digestibility, fat content, and free fatty acids in the fat. A suitable method for the determination of the oil content of fish meal is of considerable concern to the group, and much discussion took place on this subject. It was brought out that several methods for oil determination are under study at Torrey. One of these, a continuous extraction with hot chloroform-methanol mixture, appears to be superior to the A.O.A.C. acetone method and might not require acid hydrolysis of the meal as is needed in the latter method. However, crude extracts obtained with chloroform-methanol solvent contain much non-lipid material and therefore must be purified. This has been done by re-extraction with ethyl ether or saponification with alkali. It was stressed that rapidity and simplicity of determinations must be kept in mind in selecting routine analytical methods. Pepsin digestibility, lysine availability, and fat determination methods, and possibly total protein evaluations, were suggested for initial studies. It was brought out that in order to be able to compare results obtained by various investigators, standard or reference samples of fish meal should be made available for use in conducting the studies. It was agreed that the Scientific Subcommittee was to consider further the matter of analytical methods for fish meal and make recommendations based on its findings.

In discussions about odor suppression in connection with fish meal manufacture, nothing particularly new was brought out on the subject. Mention was made of the use of scrubbers and afterburners (incinerators) for removing many of the vapors, gases, and

### International (Contd.):

such odors as those coming from burnt protein. It was brought out that some portions or fractions of the odors are removed by certain specific solvents.

Mention was made of the United Kingdom Association's Work Engineers Conference in which plant engineers and other closely associated with actual plant operation get together and discuss various production problems that they encounter. It was felt that much helpful information can be exchanged in this manner. The Subcommittee would like to encourage more of this type of thing being done and has suggested that, in the absence of meetings, correspondence could be used for the exchange of ideas and for discussing problems.

Quite a lot of time was given in the Main Session of the conference to discussions about fish flour. Tentative specifications for various types of the product, distributed at the meeting, were essentially the same as those discussed at the FAO nutrition conference in Washington. An FAO spokesman stated that the specifications might be considered more in the nature of guidelines to aid the authorities in the various countries in having standardized products with which to work. FAO is now in a position to accept samples of fish flour from lots that might be used in large-scale tests. Feeding projects have been recommended for the following countries: Chile, Peru, Morocco, Senegal, Ghana, and Pakistan. About \$300,000 will be needed to carry out these large-scale tests. The spokesman intimated that the industry should make some contribution to the cost of carrying out the project, either financially or by supplying sizable quantities of fish flour. About 300 tons of suitable quality fish flour will be needed for the tests over a 3-year period. South Africa could supply 8 to 10 tons the first year; it was thought also that Chile and Peru could be depended upon to supply some of the product. It was stated that the fish flour might cost about 15 cents a pound or slightly more, and, in discussion, it developed that FAO would not object to such a price.

It is evident that the Scientific Subcommittee of the Association is well aware of the need for the industry to produce high-quality fish meal and the need of the buyer to have some assurance that he is receiving

the high-quality meal that he expects. Much of the present work of the committee is aimed at seeing that these needs are realized.

Note: See Commercial Fisheries Review, December 1961 p. 59.

### ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

#### MEETING ON SANITARY REGULATIONS AFFECTING FISH TRADE:

The Meeting of Experts on Sanitary Regulations Affecting Trade in Fish and Fish Products was held in Paris, December 11-14, 1961. The study and meeting were originally sponsored by the Organization for European Economic Cooperation (OEEC), and later after its establishment, by the Organization for Economic Cooperation and Development (OECD).

Objectives of the meeting were: (1) Examination of Draft Report on Sanitary Regulations Affecting International Trade in Fish and Fish Products, and completion of report in light of discussions at meeting, prior to publication. (2) Analysis of the scientific, technical and/or economic factors which have determined the establishment of sanitary regulations for fish and fish products presently in force in Member countries. (3) On basis of the Draft Report and papers presented by guest speakers and discussions, to recommend practical measures which might be taken toward simplification and harmonizing of national regulations in order to facilitate international trade.

Member countries were invited to nominate 3 or 4 participants who were responsible for, or interested in, sanitary, commercial, and other regulations affecting international trade in fish and fish products. It was suggested they should include: (1) Government officials concerned with sanitary and health regulations for fish and fish products. (2) Fish inspectors and/or veterinary officers responsible for sanitary control of fish and fish products. (3) Representatives concerned with the production and trade in fish and fish products. (4) Research personnel concerned with the testing and evaluation of fish and fish products from the sanitary point of view.

Forty persons attended the meeting from 15 OECD countries, together with OECD Fisheries Committee staff members, and the Norwegian consultant who prepared the Draft Report.

All participants were experts in some field of fisheries. For the most part, they were

## International (Contd.):

representatives of their national inspection services. From some countries, these representatives were veterinarians, in others, the inspection staff had gained its experience in the fishing industry. Fishery research scientists, mostly bacteriologists, and four industry participants, who represented processors and exporters, completed the group.

The Draft Report was reviewed and the Working Documents (one for each subject listed) were read by their authors at general sessions. There was then a brief clarifying discussion period, after which the meeting divided into English- and French-speaking groups for detailed discussions of the working documents. These were followed by a general session which discussed the summarized comments of the two groups as presented by their respective chairmen. Chairmen were appointed from among the delegates for the general sessions and the group discussions.

On the Draft Report, the discussions brought out that international cooperation could be improved greatly. There needs to be agreement on such items as (1) scientific facts, (2) uniform methods of study, (3) standard terminology, (4) uniform certificates, and (5) how needed work shall be done.

The discussions covered the following subjects:

1. Difficulties encountered in international trade in fresh and deep-frozen fish due to application of sanitary regulations. The speaker pointed out three problems hindering international trade in frozen fishery products: (1) unrealistic information required on import certificates, (2) high inspection fees, and (3) the lack of tolerance on labeled weight figures. During the discussion these difficulties were acknowledged but it was brought out that a number of countries did not charge for inspection, and that most enforcement agencies did operate with an unrevealed tolerance on labeled weights.

2. Difficulties encountered in international trade in canned fish and other fish products due to application of sanitary measures. The speaker asked for uniform and coordinated regulations for canned fishery products with regard to the use of additives, labels, and cans, semipreserved products, and in-

spection and sampling, giving numerous examples of difficulties encountered. His request that preservatives not be declared on the label, or that it read only "Approved preservative added," met complete opposition from the veterinarians who contended that some consumers were allergic to some preservatives and must know what had been added.

3. Sanitary regulations for fresh fish: In outlining the possibilities of harmonizing regulations for fresh fish, the speaker and the discussion emphasized the protection needed to be afforded the consumer as contrasted with the previous speakers who were concerned mainly with trade obstacles. Inspection at sea was not considered feasible and must remain a responsibility of the fishermen. Otherwise, inspection must extend from the docks to the retailer. Exchange of inspectors between countries was deemed well worthwhile.

4. Sanitary regulations for deep-frozen fish: There was considerable discussion of the technical points in this paper. Two conclusions reached were that a bacteriological test of frozen products probably was not necessary except for breaded products, and there should be some simple means of determining whether frozen products had thawed and refrozen in distribution channels.

5. Sanitary regulations for canned fish and semipreserved fish.

6. Sanitary regulations for salted fish.

7. Sanitary regulations for smoked and dried fish.

8. Sanitary regulations for shellfish.

9. Uniform methods of inspection and analysis of fish and fish products in international trade and uniformity of terminology.

10. International cooperation of fish inspection services and problems of training fish inspectors.

In summary, the meeting concluded that:

1. The basic draft report provided a very comprehensive view of the problems.

2. International trade in fishery products met with great difficulties because of wide

## International (Contd.):

differences in national regulations on additives, labeling, etc.

3. Sanitary and quality control regulations were so closely related they must be studied together.

4. International regulations are premature until diverse regulations of exporting and importing countries have been studied and reconciled.

5. The importance of fresh fish as a raw material for all processed products was realized but harmonization of sanitary regulations for frozen, canned and semipreserved fish was deemed an immediate need. Similar action for salted, smoked, and dried fish and shellfish should follow.

6. There should be recommendations that:

- (a) Investigation of the problems of harmonization be conducted at national and international levels in collaboration with all interested governmental agencies, specialized research institutes, and the fishing industry.
- (b) Codes of basic scientific requirements and methods of control be prepared by expert groups established by OECD.
- (c) Duplicate work be avoided by cooperation with FAO, WHO, the International Institute of Refrigeration, the Permanent International Canned Food Committee, the European Council for Codex Alimentarius, the International Council for the Exploration of the Sea, etc.
- (d) Expert groups be set up for: I - Canned Fish and Semipreserves, II - Deep-Frozen Fish, III - Fresh Fish and Crustaceans, IV - Molluscs, and V - Salted, Smoked, Dried, and Other Fish.
- (e) OECD stimulate cooperation by assisting in exchange of pertinent information on sanitary regulations, inspection, control methods, etc.
- (f) OECD consider organizing a meeting of national inspection service officers to discuss the recommendations of the expert groups and their application, and closer cooperation between national inspection services.

The report of the meeting was scheduled to be presented to the OECD Fisheries Committee for review and recommendations at its next meeting, in late February or early March 1962. (Regional Fisheries Attache, United States Embassy, Copenhagen, report of January 4, 1962.)

## EUROPEAN FREE TRADE ASSOCIATION

ANOTHER TEN PERCENT  
TARIFF CUT ANNOUNCED:

On March 1, 1962, five members of the European Free Trade Association (EFTA)--Denmark, Portugal, Sweden, Switzerland, and the United Kingdom--will cut their intra-EFTA tariffs by another 10 percent. Austria and Norway will follow suit not later than September 1. Under the Stockholm Convention (EFTA's "constitution"), this cut was not due until July 1, 1963.

The first EFTA tariff cut, one of 20 percent, was made on July 1, 1960, less than two months after EFTA came into being. The next cut, one of 10 percent was scheduled for January 1, 1962, but was actually carried out on July 1, 1961.

The advantages of the March 1 cut will be extended by the seven full members of EFTA to Finland, an associate member, on the same terms and conditions as they will be applying this decision among themselves.

In principle, the reductions are calculated on the basis of the tariffs actually in force and levied against imports on January 1, 1960. For Denmark, the basis for any product is the tariff applied to imports from other member states on March 1, 1960.

On March 2, the day after the tariff cut is effected, the Ministerial Council of EFTA will meet in Geneva. (*EFTA Reporter*, February 21, 1962.)

Note: See *Commercial Fisheries Review*, February 1962 p. 57.

## LATIN AMERICAN FREE TRADE ASSOCIATION

## TARIFF NEGOTIATIONS CONCLUDED:

The tariff negotiations between the seven original countries--Argentina, Brazil, Chile, Mexico, Paraguay, Peru, and Uruguay--of the Latin American Free Trade Association (LAFTA) have been concluded following almost 3 months of negotiations in Montevideo.

The tariff reductions listed in each of the national schedules of concessions forming part of the Act of Negotiations became effective in the respective negotiating country on January 1, 1962.

The combined concession lists comprise a total of over 2,450 items, many of which,



## International (Contd.):

however, appear in the schedules of two or more countries. The number of individual concessions, including subitems, granted by each of the negotiating countries, expressed in terms of the Brussels tariff nomenclature, were as follows: Argentina, 413; Brazil, 623; Chile, 343; Mexico, 283; Paraguay, 232; Peru, 143; and Uruguay, 419.

The concessions granted apply mainly to natural products and raw materials generally traded between the countries, such as live animals, cereals, fats and oils, mineral products, hides and skins, fibers, and the like. Concessions also were granted, however, on many industrial products, such as textile manufactures, iron and steel products, machinery, electrical apparatus, and vehicles.

The concessions consist of reductions in duty of at least 8 percent below the rates applicable to imports from non-LAFTA countries and are expressed in terms of the rates to be collected rather than as percentage reductions from the general rates. These reduced rates do not apply to imports from the United States or other countries not members of LAFTA.

Colombia and Ecuador also joined the LAFTA, but too late to participate in the tariff negotiations just concluded. Separate negotiations with Colombia are scheduled to begin at an early date and those with Ecuador somewhat later.

Only single copies of the individual country schedules, in Spanish, have been received thus far by the American Republics Division, Bureau of International Programs, U. S. Department of Commerce, Washington 25, D.C., and are available for consultation. Information regarding the concession rates of duty granted by any of the signatory countries on specified products may be obtained from that agency.

The Latin American Free Trade Association was established by the Treaty of Montevideo, signed on February 18, 1960, and ratified on May 2, 1961. The tariff negotiations ended December 11, 1961.

## WHALING

## JOINT CANADIAN-JAPANESE ENTERPRISE TO OPERATE ON CANADA'S WEST COAST:

The Japanese Fisheries Agency was expected to authorize a large Japanese fishing

company to establish a joint whaling company in Canada to carry out whaling off the west coast of Canada, according to the February 8, 1962, issue of the Japanese periodical Suisan Tsushin. Two catcher boats were expected to sail for Canada in mid-March.

The Canadian side will invest US\$800,000 and the Japanese firm \$600,000 in the joint company to be established on Vancouver Island. The Japanese firm is said to intend using the base on Canada's west coast not only for whaling but also for trading in tuna, salmon, and other products.



## Australia

## TUNA FISHERY TRENDS AND SURVEY:

Continuing storms on the New South Wales south coast hampered tuna fishing from mid-November to mid-December 1961. The catch was approximately 530 tons during that period. On December 18, the total for the season was 1,583 tons.

The Captain of the Australian tuna survey vessel Estelle Star, which was then at Albany, was in Perth during the last week of November 1961 investigating the installation of long-line equipment in the vessel. It is hoped that experimental long-lining will be carried out in 1962.

Estelle Star, last season's top tuna vessel, has been investigating tuna possibilities off south-west Australia since August 1961, but as of early 1962 there have been no positive commercial indications. The survey is being conducted by the Fisheries Division, Australian Department of Primary Industry.

Late in November 1962, at Albany, the crew of the Estelle Star took live bait. The vessel worked back to Fremantle where she arrived on December 6. En route two southern bluefin tuna were trolled and tagged. (Australian Fisheries Newsletter, January 1962.)



## Canada

## FISHERIES PATROL OF EAST COAST WATERS:

As a precautionary measure against the encroachment of foreign fishing vessels on



## Canada (Contd.):

east coast Canadian waters, patrols are being carried out by Canadian surface craft and aircraft, the Canadian Fisheries Minister announced on February 12, 1962.

The area concerned is the southwest coastal region of Newfoundland from Cape Anguille to Grand Bruit, but the range can be expanded if considered necessary.

The Fisheries Department's Newfoundland-based vessel *Arctica* is in the area and is being joined by the Department's vessel *Cygnus* out of Halifax. Reconnaissance missions are being carried out by naval maritime patrol aircraft.

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# NEW BRUNSWICK FISH MEAL PRICES, JANUARY 1962:

Fish-meal prices (60-percent protein) quoted by New Brunswick producers the latter part of January 1962 averaged about C\$120 a short ton (\$2.00 a protein unit) for both exports and domestic sales. The price has remained the same since late July 1961. But in January dealers reported that supplies were very limited. (United States Consulate, Saint John, N. B., Canada, January 30, 1962.)

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# FISHERY LANDINGS, 1960-61:

Canadian sea fisheries landings (including Newfoundland) during 1961 totaled 1,856.8 million pounds (valued at C\$96.8 million) as compared with 1,679.7 million pounds (valued at C\$89.6 million) during 1960--an increase of 10.5 percent in quantity and 8.0 percent in value, according to the December

Canadian Landings and Ex-Vessel Values of Principal Species of Fish, 1960-61

Species	Landings		Value	
	1961	1960	1961	1960
	(In 1,000 Lbs.)		(In 1,000 C\$)	
<b>Atlantic Coast:</b>				
Cod .....	517,905	604,620	15,434	16,537
Haddock .....	118,772	95,127	4,645	3,685
Pollock .....	49,634	57,605	1,066	1,262
Herring .....	209,009	246,329	3,035	3,683
Lobsters .....	47,752	51,516	17,925	18,031
<b>Pacific Coast:</b>				
Halibut .....	1/28,560	2/33,869	1/6,008	2/5,399
Herring .....	447,234	187,675	4,577	3,153
Salmon .....	118,179	75,153	24,841	18,411

1/Including 4,372,000 pounds (C\$859,000) landed in U. S.

2/Including 6,707,000 pounds (C\$1,020,000) landed in U. S.



Fig. 1 - East coast Canadian fishermen in port repair their trawl lines. This type of gear used for cod and other groundfish caught by dory fishermen.



Fig. 2 - A method of drying salted cod still used in Newfoundland, Canada.



Fig. 3 - With a power-operated brailer, sardines are transferred to the hold of a carrier vessel where they are held in brine for three hours. Sardines are fished off the east coast of Canada.

## Canada (Contd.):

## 1961 Monthly Review of Canadian Fisheries Statistics.

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COLD-STORAGE HOLDINGS  
AND FREEZINGS OF  
SELECTED FISHERY PRODUCTS:

Stocks in Canada of frozen salt- and fresh-water fish and shellfish (not including smoked

fish and fish held for bait and animal feed) amounted to 35.2 million pounds on January 31, 1962, compared with 43.0 million pounds on January 31, 1961.

Freezings of salt- and fresh-water fish and shellfish amounted to 218.3 million pounds during 1961 as compared with 198.9 million pounds in 1960--an increase of 9.7 percent.

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CANADIAN FIRM ASSIGNED SOLE  
RIGHTS TO BUILD NORWEGIAN-  
TYPE STERN TRAWLER:

A shipyard in Molde, Norway, has concluded arrangements with a Canadian firm in New Brunswick regarding the rights to build the new stern trawler-type constructed by that shipyard. The Canadian firm has the sole rights for building the stern trawler in Canada. The Norwegian shipyard's drafting office as of early this year was in full operation preparing the drawings for the Canadian firm. (Fiskaren, Norwegian periodical, January 17, 1962. News item translated by Regional Fisheries Attache, United States Embassy, Copenhagen.)



## Chile

## FISH MEAL INDUSTRY EXPANDING:

The concessions and privileges authorized under Chile's Fisheries Law (DFL No. 266 of April 1960 and Decree No. 133 of February 9, 1961), augmented by the 20-30 percent subsidies granted industry in the two northern provinces, have brought a sharp increase in the expansion of the fish meal industry in the Arica-Liquique area.

New capital investments programmed for new plants, expansion of present plants, and additions to the fishing fleet are estimated at Ch/E<sup>0</sup>15 million to Ch/E<sup>0</sup>17 million (US\$15.8 million to \$17.9 million). Of this sum Corporacion de Fomento de la Produccion de Chile (CORFO) will provide about Ch/E<sup>0</sup> 13 million (\$13.7 million) in loans to private companies and in the development of its own enterprise, Empresa Pesquera de Tarapaca S.A. CORFO has obtained a loan of up to US\$5 million from the Inter-American Development Bank to finance the purchase of plant machinery and boats. Foreign private capital includes United States, South African, Swiss, and Norwegian investors.

Products	January 31	
	1962	1961
	... (In 1,000 Lbs.) ...	
<b>Blocks and slabs:</b>		
Cod .....	3,268	3,653
Haddock .....	1,129	1,548
Flounders and sole .....	386	861
Unclassified .....	925	568
<b>Fillets and steaks 1/:</b>		
Cod .....	2,059	2,669
Haddock .....	1,600	1,457
Ocean perch .....	1,199	1,367
Flounders and sole .....	2,857	3,629
Halibut (not incl. fletches) .....	200	1,037
Salmon .....	108	66
Unclassified .....	145	96
<b>Portions, all species:</b>		
Cooked breaded .....	200	94
Raw breaded & unbreaded .....	126	283
Halibut, dressed .....	4,019	4,657
Salmon, dressed .....	3,573	5,508
Lobster meat .....	270	427
<b>Scallops:</b>		
Unbreaded .....	449	263
Breaded raw or cooked .....	160	69
<b>All fresh-water fish:</b>		
Dressed or round .....	3,682	4,340
Fillets .....	4,395	3,109

1/Does not include cooked or uncooked breaded products.

Products	January-December	
	1961	1960
	... (In 1,000 Lbs.) ...	
<b>Blocks and slabs:</b>		
Cod .....	47,911	47,803
Haddock .....	11,213	7,999
Flounders and sole .....	2,805	49
Unclassified .....	6,246	3,166
<b>Fillets and steaks 1/:</b>		
Cod .....	24,525	19,048
Haddock .....	15,893	13,360
Ocean perch .....	12,331	12,506
Flounders and sole .....	19,806	22,992
Halibut (not incl. fletches) .....	1,568	2,885
Salmon .....	474	459
Unclassified .....	2,058	1,004
<b>Portions, all species:</b>		
Cooked breaded .....	1,446	100
Raw breaded & unbreaded .....	1,550	100
Halibut, dressed .....	18,532	14,515
Salmon, dressed .....	11,982	14,377
Lobster meat .....	1,921	2,771
<b>Scallops:</b>		
Unbreaded .....	5,814	5,515
Breaded raw or cooked .....	2,692	362
<b>All fresh-water fish:</b>		
Dressed or round .....	5,813	2,306
Fillets .....	5,454	5,076

1/Does not include cooked or uncooked breaded products.

## Chile (Contd.):

The fishing fleet is increasing not only in number but also in size of vessels which will result in a substantial increase in its fishing power. It is anticipated that the landings of the Iquique fleet will be around 800,000 metric tons of anchovies in 1963. The entire fish meal production (approximately 160,000 tons) will be for export.

The continental shelf is narrow off northern Chile and the purse seiners work close to shore. There is real concern on the part of some technicians in the absence of scientific studies of the possible extermination of the anchovy which is the commercial fish of the northern zone. (United States Embassy, Santiago, report of February 1, 1962.)



## Colombia

FISHING VESSEL LICENSING PROCEDURE:

The Division of Fishing of the Ministry of Agriculture of Colombia reported that licenses to fish for shrimp in Colombia are limited to 100 on the Pacific Coast and 60 on the Atlantic Coast. According to the Chief of that Division, about 80 licensed operators were fishing shrimp on the Pacific Coast as of mid-February 1962 with prospects very slim for additional licenses to be granted for that region due to an excessive supply of shrimp on hand in local storage centers. According to this same official, no operators were holding licenses for shrimp fishing on the Atlantic Coast.

In addition to this bleak picture for a new shrimp operator is the Colombian Government requirement that each boat owner establish onshore facilities for processing or storage of his catch, or alternatively, affiliate himself with an existing shrimp operator who maintains such required facilities. (February 20, 1962, report from the United States Embassy, Bogota.)



## Congo Republic

FISHING INDUSTRY TRENDS, 1961:

SAPAC (La Societe de Peche d'Armement et de Conservation), the only fish cannery (tuna and pilchards) in the Congo, undertook

new investments in 1961 to increase considerably the capacity of its canning factory and to double the capacity of its storage facilities. Production was expected to rise by about one-third in 1961 to a monthly average of between 450,000 and 500,000 cans of tuna and pilchards (as compared with a monthly average output of 375,000 cans in 1960). By the end of the third quarter 1961, however, output was running much higher, at about double the 1960 rate. The pack is sold almost exclusively in the Equatorial Customs Union.

A United States west coast canning firm with large operations in Ghana, indicated serious interest in setting up a fish processing and fish freezing plant at Pointe-Noire if suitable investment incentives and other concessions were granted by the Congolese Government. Little progress had been achieved on this proposal by the end of 1961 although independent studies indicate that long-term investment opportunities in a fish processing and freezing industry in the Congo are good.

No statistical data are available on salt- or fresh-water fishing operations in the Congo. Most of Congo's fishing is done by pirogues operating from the beaches and in the rivers. Some fish supplies are also sold in Pointe-Noire by trawlers operating out of other countries. SAPAC also has a small fishing fleet of its own.

Aside from the above developments, and despite the introduction in June 1961 of an Investment Code setting forth certain rights privileges, and guarantees for investors, there appeared to be little interest, internally or externally, in undertaking private investments in new plants or in the expansion of existing fishery facilities. (United States Embassy, Brazzaville, report of February 22, 1962.)



## Denmark

FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS:

January-November 1961: Denmark exported 1.7 million pounds (41.0 percent) more fresh and frozen fish fillets during November 1961 than in the same month of 1960. Only 206,000 pounds, mostly cod and related species, were shipped to the United States in November 1961.

From January through November 1961, Denmark shipped 10.2 million pounds of frozen fish fillets and blocks to the United States, again mostly cod and related species.

## Denmark (Contd.):



Fresh cod packed ready for freezing. Denmark's 1961 cod catch set a new record of 64,000 metric tons. Caught mainly in the Eastern Baltic and North Seas, more than half the catch is filleted.

Almost 19.4 million pounds (41.8 percent) more fresh and frozen fillets and blocks were exported by Denmark in January-November 1961 than in the same period of 1960.

**Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Byproducts, January-November 1961 1/**

Product	November		Jan.-Nov.	
	1961	1960	1961	1960
..... (1,000 Lbs.) .....				
<b>Edible Products:</b>				
<b>Fillets and blocks:</b>				
Cod and related species	1,250	1,006	28,536	23,105
Flounder and sole	2,126	2,936	24,515	21,643
Herring	2,512	-	11,713	-
Other	51	2/270	1,081	2/1,680
<b>Total</b>	<b>5,939</b>	<b>4,212</b>	<b>65,845</b>	<b>46,428</b>
..... (Short Tons) .....				
<b>Industrial Products:</b>				
Fish meal, solubles, & similar products	2,712	3,480	47,793	37,906

1/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.  
2/Includes herring fillets.

There was a drop of 768 short tons in Denmark's exports of fish meal, fish solubles, and other similar products in

November 1961 as compared with the same month of 1960. But exports of those products for the first 11 months of 1961 were 26.1 percent greater than for the same period in 1960.

\* \* \* \* \*

**January-October 1961:** Denmark exported 644,000 pounds (22.3 percent) more fresh and frozen fish fillets during October 1961 than in the same month of 1960. Only 431,000 pounds, mostly cod and related species, were shipped to the United States in October 1961.

From January through October 1961, Denmark shipped 10.0 million pounds of frozen fish fillets and blocks to the United States, again mostly cod and related species.

Almost 17.7 million pounds (41.9 percent) more fresh and frozen fillets and blocks were exported by Denmark in January-October 1961 than in the same period of 1960.

**Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Byproducts, January-October 1961 1/**

Product	October		Jan.-Oct.	
	1961	1960	1961	1960
..... (1,000 Lbs.) .....				
<b>Edible Products:</b>				
<b>Fillets and blocks:</b>				
Cod and related species	1,406	1,503	27,286	22,089
Flounder and sole	2,781	3,447	22,389	18,707
Herring	1,619	-	9,201	-
Other	103	2/315	1,030	2/1,410
<b>Total</b>	<b>5,909</b>	<b>5,265</b>	<b>59,906</b>	<b>42,216</b>
..... (Short Tons) .....				
<b>Industrial Products:</b>				
Fish meal, solubles, & similar products	5,590	4,911	45,081	34,426

1/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.  
2/Includes herring fillets.

There was an increase of 679 short tons in Denmark's exports of fish meal, fish solubles, and other similar products in October 1961 as compared with the same month of 1960. Exports of those products for the first ten months of 1961 were 31.0 percent greater than for the same period in 1960.

\* \* \* \* \*

**AUCTION OF GREENLAND SEAL SKINS:**

The Danish Royal Greenland Trade Department announced an auction of Greenland seal skins in Copenhagen, on March 7, 1962. About 21,160 Greenland ringed seals, 179 bladdernosed seals, 2,636 harp seals, and 17 saddle seals were to be offered for auction. (United States Embassy, Copenhagen, report of February 9, 1962.)



**Finland**

**GOVERNMENT'S EFFORTS TO MODERNIZE FISHING FLEET:**

The Fisheries Section of Finland's Board of Agriculture (part of Ministry of Agriculture



## Finland (Contd.):

for some time has been concerned about the practice followed by Finnish fishermen of purchasing used trawlers which have been discarded by the Swedish fishing industry as a result of the latter's modernization program. In an effort to halt this practice, the Board of Agriculture has requested Finland's domestic shipbuilding industry for bids on steel fishing vessels costing Fmk 18 to 27 million (US\$55,900-83,900).

According to the plans of the Ministry, the fishing vessels would be purchased by private fishermen and would be largely financed by the commercial banks which would lend up to 75 percent of the value of the vessel at the going rate of interest. The Government in turn would pay a subsidy which would lower the effective interest rate to 3 percent, using for this purpose a Fmk 15 million (\$46,600) appropriation in the 1962 budget.

After the shipbuilders submit their proposals, the Board of Agriculture will inform fishermen of the availability of bank loans for the purchase of the trawlers. (United States Embassy, Helsinki, report of February 9, 1962.)



## German Federal Republic

## FISH OIL MARKET AS OF FEBRUARY 1962:

According to the leading fish oil importer, as of early February 1962, sales of fish oil in West Germany continued slow. Small quantities of U. S. menhaden oil were purchased by the margarine industry at a price of about US\$112 per metric ton (5.1 U. S. cents a pound),

c.i.f. Rotterdam, which is \$2 per ton (9/10 of a cent) less than the price paid in early January 1962. Peruvian oil was offered at \$115 a ton (5.2 cents a pound), c.i.f. Rotterdam, but no business was transacted on that basis. Some Peruvian oil was sold locally at about \$112 a ton. The importer believed that by March 1962 the Peruvians would reduce their prices. Reportedly, most buyers do not want to pay more than \$110 a ton (5.0 cents a pound) for Peruvian oil.

Margarine manufacturers apparently have ample stocks of fish oil to carry their production through May-July 1962. The depressed status of the fish oil market appears to be partly attributable to the prospect of the appearance of significant quantities of whale oil on the market in the next few months. The largest British user of fish oil is reportedly setting a price of £50-52 (US\$140-145.60) per long ton (6.4-6.6 cents a pound) for whale oil.

German fish oil production was at its seasonally low level in February. Export sales of German oil are sluggish in view of increased competition from Icelandic and Norwegian oils, but the low level of exports has not yet diverted German oil to the domestic market and thus render imported oils significant competition. (United States Consulate, Bremen, report of February 9, 1962.)

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FISH MEAL PRICES,  
FEBRUARY 2, 1962:

Prices reported at Hamburg Commodity Exchange as of February 2, 1962, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port were as follows:

Type of Fish Meal	Protein Content (%)	Delivery	DM/metric Ton 1/	US\$/Short Ton
Danish herring .....	70-75	Loco	785.00	178.04
South African .....	65-70	Apr.-Oct. 1962	815.00	139.48
German .....	50-55	Feb. 1962	627.50	142.32
" .....	55-60	Feb. 1962	637.50	144.58
" .....	60-65	Feb. 1962	650.00	147.42
Peruvian .....	65-70	Feb. 1962	720.00	163.29
" .....	65-70	Mar. 1962	675.00	153.09
" .....	65-70	May-Dec. 1962	605.00	137.21
Angola .....	65-70	Mar. 1962	672.50	152.52
Icelandic herring .....	70-75	Feb.-Mar. 1962	755.00	171.23
" cod .....	65-70	Feb.-Apr. 1962	757.50	171.80

1/ Values converted at rate of 4.0 deutsche marks equal US\$1.  
Note: "Loco" means where and as it is at the time of sales, and all subsequent expenses to be at buyer's account.



### German Federal Republic (Contd.):

From January 5 to February 2 prices at the Hamburg Exchange showed a mixed trend. Prices for Peruvian fish meal firmed up and were substantially higher early in February than a month earlier. On the other hand, prices for German and Angola meal dropped during that same period. (United States Consulate, Bremen, report of February 9, 1962.)

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### SWEDISH HERRING LANDINGS IN GERMANY:

Representatives for Swedish west coast fishermen recently met with representatives for the fish industry in Bremen for negotiations regarding the Swedish herring landings in Germany. It was pointed out from the German side that less than 10 percent of the Swedish herring landings in Germany in 1961 were made in Bremerhaven, and the question was raised whether it was possible for Swedish fishermen to increase the number of landings in Bremerhaven.

The Swedish group has also negotiated with West German representatives in Hamburg regarding the minimum price for herring landed in Germany. The West German canning industry has previously considered the present minimum price of DM13.60 per box containing 40 kilos (3.8 U. S. cents a pound) of herring too high. This price was accepted by the canneries and will remain in effect until July 1, 1962.

The Swedish West Coast Fishermen's group claims that Swedish fishermen in 1961 made 538 direct landings of herring in Germany, of which 22 were made in Kiel, 50 in Bremerhaven, 72 in Hamburg, and 394 in Cuxhaven. The quantity landed exceeded 20,000 metric tons, valued at 12 million Swedish crowns (US\$2.3 million).

The Swedish organization will try to increase the landings in Bremerhaven, but the spokesman said the location of the port, the facilities available to fishermen and the price received are the deciding factors for the landings. As of early February, Swedish fishermen received DM25.00 per box containing 40 kilos (7.1 cents a pound) of herring in some West German ports.

The Swedish herring landings in West Germany from January 1, 1962, were subject to

a 6 percent customs duty which remained in effect until February 15, 1962. From that date and until June 15, 1962, there is a duty-free period for herring imports. By that time, Swedish west coast fishermen hope that the duty-free quantity that previously has been promised, has been established. (United States Embassy, Goteborg, report of February 13, 1962.)



### Ghana

#### JAPANESE MAKING TUNA SEINES:

A major Japanese net manufacturer is hanging tuna seines for four new Ghanaian fishing vessels purchased from British shipyards. Each net will weigh about 12 tons, will cost about \$55,000, and will be 450 fathoms long by 7 strips deep. The nets will be completely hung, dipped, and assembled in Japan and shipped to Ghana ready to use.



### Iceland

#### FISHERY TRENDS, 1961:

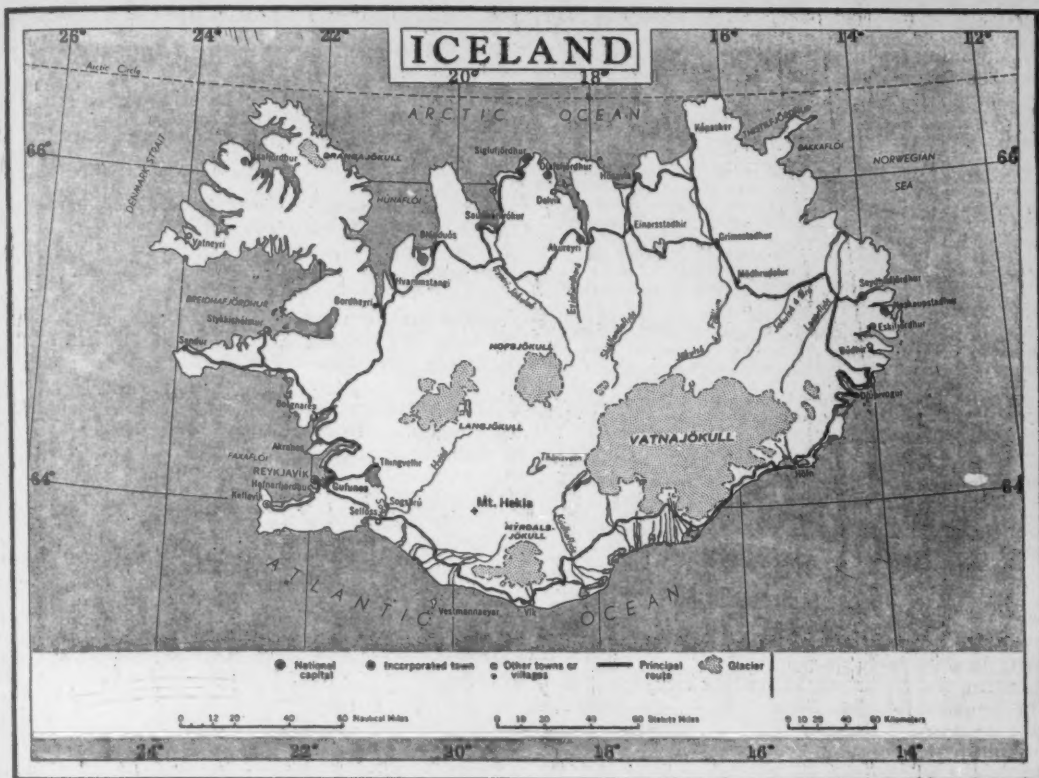
**Fishery Landings:** The Icelandic fishing industry, which provides over 90 percent of commodity exports, enjoyed an exceptionally good year in 1961. The estimated catch for 1961 amounted to 631,000 metric tons as compared with 514,000 metric tons for 1960, an increase of 22.8 percent. The success of the fishing sector is based on the excellent herring catches. While the 1961 catch of white fish (314,000 metric tons) declined 16 percent, compared with 1960 (374,000 metric tons), the 1961 herring catch (317,000 metric tons) increased by 133 percent compared with 1960 (136,000 metric tons).

By the end of November 1961 the value of exports of herring products for 1961 was 560,427,000 kronur (US\$13.0 million), an increase of 43 percent in constant value over the comparable period in 1960. Of that amount, cured herring accounted for 259,434,000 kronur (\$6.0 million); herring oil, 106,324,000 kronur (\$2.5 million); herring meal, 136,061,000 kronur (\$3.2 million); and frozen herring, 58,608,000 kronur (\$1.3 million). For the south coast winter season, Iceland had foreign salted herring sales contracts for 120,000 barrels with the following countries: Soviet Union, 80,000; Poland, 20,000; and West Germany, 20,000 barrels. With the exception of the Soviet Union, most of the contracts had been filled by the end of 1961.

During December 1961, herring producers were experiencing difficulty in finding buyers for frozen herring. Out of a total 11,000 metric tons of frozen herring on hand at the end of 1961, only 6,000 tons have been sold--3,250 tons to West Germany and 2,500 tons to Poland. Negotiations to sell 5,000 tons to the Soviet Union were suspended. It is understood that Rumania is willing to buy 1,000 tons; likewise East Germany and Czechoslovakia. However, Iceland is probably reluctant to add to its large surplus of nonconvertible claims against the latter three countries.

**Fish Oil:** It is estimated that Iceland produced 48,500 metric tons of fish oil in 1961, compared to 34,100 metric

## Iceland (Contd.):



tons in 1960, an increase of 43.5 percent. Fish oil exports are estimated at 36,500 metric tons for 1961 as compared with 52,900 metric tons for 1960. Iceland had a considerable supply of fish oil at the end of 1959. A severe drop in the price of fish oil, especially herring oil, caused by low prices offered in Western Europe by Peru, coupled with decreased exports of fish oil, reduced Iceland's foreign exchange fish oil earnings from 293,000,000 kronur (\$6.8 million) in 1960 to approximately 230,000,000 kronur (\$5.3 million) in 1961.

**Trawler Difficulties:** The prosperity of the fishing sector was not shared by the trawlers. The total trawler catch for 1961 was only 70,000 metric tons or about two-thirds the 1960 catch. The 1960 catch was 40,000 metric tons less than the one in 1959. In four years the trawler catch has dropped from 50 percent to 12 percent of the total fish catch. The Icelandic Minister for Fisheries claimed that extension of the fishing limits has cost each trawler about 600 metric tons in catch, a loss of 1.2 million kronur (\$27,840). It is presently being considered whether or not to allow the trawlers unrestricted entry within the 12-mile fishing limit. If such a ruling is made, the conservation argument which Iceland used to exclude trawlers of other nations will cease to be valid. Another possibility which has been considered is to compensate the trawlers from the Fisheries Fund. The motorboat owners have strongly opposed this solution, however.

**Investment and Credit:** Credit extended to the fisheries sector for the last half of 1961 continued to be about one-

third of the total bank credit. Investment in fishing returned to the normal 10 percent of total investment after the upsurge to 23 percent in 1960 caused by extraordinary investment in fishing vessels. At present there is also ample capacity for fish processing so that no large increase in investment in the fisheries sector is anticipated for the near future.

**Developments in Selling and Pricing:** The Althing (Parliament) has established a Fisheries Price Board which is empowered to set the price for white fish and herring for one year (more likely for one season) in advance. If this board is unable to reach a decision, the matter is sent to a board of arbitration. The Government has allowed a new company to sell frozen fish, an activity which for years had been the exclusive domain of the Freezing Plants Corporation and the Icelandic Federation of Cooperatives.

The fish pricing committee organized under the Althing's new regulations finally announced on January 29, 1962, the price to be paid vessels for cod and haddock landed during the main fishing season in 1962. This is 2.96 kronur per kilo (3.1 U.S. cents a pound), 0.25 kronur (26 cents a hundred weight) more than the average price paid in 1961.

The price increase of 9 percent was acclaimed by the Independence Party press as ensuring labor peace during the fishing season.

**Frozen Fish Exports:** In 1961 the United States replaced the Soviet Union as the principal buyer of Icelandic frozen fish. The United States imported 16,000 metric tons of ice-

## Iceland (Contd.):

landic frozen fish as compared with 3,250 metric tons imported by the Soviet Union. In 1960 the Soviet Union imported 24,000 metric tons and the United States imported 12,000 metric tons of frozen fish. Smaller landings of ocean perch, which normally go to the Soviet Union, and the increased capacity of the Icelandic-owned freezing plant in Maryland partially explain the shift in the pattern of Icelandic frozen fish exports.

**The European Common Market:** The Independence Party (the leading Government Party) resolved at its convention in October 1961 that Iceland must enter the Common Market (EEC) through some form of limited association. This attitude is shared in varying degrees by the Government opposition, the Progressive Party. The Icelandic Minister for Commerce said that Common Market outer tariffs against Iceland will eventually triple, therefore Iceland cannot afford to remain outside the EEC.

On January 1, 1962, the duty on frozen fish to Germany (at present Iceland's largest customer within the EEC) increased from 5 percent to 9.3 percent; iced fish, from 0 to 5 percent and will eventually rise to 15 percent. The duty on frozen fish to Holland increased from 0 to 6 percent and the duty on salted fish to Italy, which increased from 0 to 4.3 percent, will eventually become 13 percent. As other countries, which are customers as well as Iceland's competitors, enter the EEC, Iceland's competitive position will further deteriorate. On the other hand, it is felt that unrestricted entry of labor and capital, which full membership in the EEC implies, would be intolerable for Iceland, a country with only 177,000 people. (United States Embassy, Reykjavik, reports of February 1 and 6, 1962.)

Note: Values converted at 43.06 kronur equals US\$1.

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UTILIZATION OF FISHERY LANDINGS,  
JANUARY-OCTOBER 1961:

How Utilized	1961		1960	
	... (Metric Tons) ...			
<b>Herring/ for:</b>				
Oil and meal . . . . .	184,447		91,088	
Freezing . . . . .	12,199		3,692	
Salting . . . . .	56,164		17,277	
Fresh on ice . . . . .	4,119		872	
Canning . . . . .	114		-	
<b>Groundfish/ for:</b>				
Fresh on ice landed abroad . . .	24,625		20,282	
Freezing and filleting . . . . .	133,360		185,066	
Salting . . . . .	65,700		70,994	
Stockfish . . . . .	44,581		53,375	
Home consumption . . . . .	7,017		7,266	
Oil and meal . . . . .	3,414		6,173	
<b>Shellfish for:</b>				
Freezing: Lobster . . . . .	1,489		1,855	
Shrimp . . . . .	810		-	
Canning (shrimp) . . . . .	243		-	
Total production . . . . .	538,282		457,940	
1/Whole fish.				
2/Drawn fish.				



## Indonesia

JAPANESE-INDONESIAN  
FISHERIES AGREEMENT:

According to a report from Osaka, Japan, an agreement on an Indonesian-Japanese fisheries cooperation project is in the offing.

The Wakayama prefectural fisheries cooperative which has long been negotiating with the Indonesian authorities, expected to start building operation bases in Indonesia in April to put the project afoot.

The agreement, to remain in effect for 20 years, has been negotiated for nearly four years between the countries concerned.

It would reportedly obligate the Japanese side to: (1) build two operation bases, probably at Djakarta and Tjirebon, refrigeration warehouses, a cannery, a radio station, and medical facilities; (2) construct 25 fishing vessels and turn them over to Indonesia; and (3) send 113 fishing experts and technicians, including physicians and radio operators.

These obligations would constitute a credit to Indonesia. Repayment to the Wakayama prefectural cooperative would be in the form of a percentage of the realized value of the fish caught.

As of December 1960, when a preliminary agreement was signed between the Wakayama group and the Indonesian Department of Veterans' Affairs, the value of the credit to be extended was US\$2 million. (United States Embassy, Djakarta, report of February 8, 1962.)



## Israel

FIRST TRAWLER-FREEZER VESSEL  
EXCEEDS EXPECTATIONS:

The former Norwegian factoryship *Havkvern I*, after its sale to Israel, was equipped with deep-freezing equipment which would maintain a temperature of -48 degrees C. (-54.4° F.) for 12-14 metric tons of fish per 24 hours. The storage space measures 450 cubic meters. Its name was changed to *Azgad*. The equipment was designed by Norwegian and Japanese experts for trawling in northwest African waters.

On its maiden trip, the *Azgad* obtained a full load of frozen fish in 15 days and landed its catch in Haifa 10 days after leaving the fishing grounds.

In the 6 months the *Azgad* has been fishing in 1961 as Israel's first trawler and freezer vessel, it has exceeded expectations by 15-20 percent. Its owner has ordered a new

## Israel (Contd.):

freezer-trawler to work with the Azgad. The company plans to extend its operations to the Red Sea and the Indian Ocean. (January 17, 1962, Fiskaren, Norwegian periodical. News item translated by Regional Fisheries Attache, United States Embassy, Copenhagen.)



## Japan

PRICES FOR FROZEN ALBACORE TUNA:

The Japanese price of frozen albacore tuna for export to the United States was reported higher in late January 1962--from US\$340 a short ton f.o.b. Japan to \$350 a ton, according to a translation from the Japanese periodical Suisan Tsushin, February 8, 1962. However, Japanese tuna packers in the Shizuoka area early in February were reported to be buying ship-frozen albacore tuna for 130 yen a kilogram (\$328 a short ton) and, as a result, one United States packer is said to be offering to buy frozen albacore for \$360 a short ton. Yellowfin tuna was reported selling for \$340 short ton.

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PRODUCERS TO CONTINUE SEPARATE EXPORT QUOTAS TO UNITED STATES FOR FROZEN YELLOWFIN AND ALBACORE TUNA:

The Japanese Export Frozen Tuna Producers Association met on January 19 to draft 1962 regulations for frozen tuna exports to the United States. Included in the agenda was a discussion on whether a single combined frozen tuna export quota should be adopted for albacore and yellowfin exported directly from Japan proper, in the same manner that the Exporters Association is currently handling frozen tuna exports to the United States.

At this meeting, the Producers Association appointed two separate committees, one to draft quota regulations on transshipments and the other on quota regulations covering direct exports from Japan to the United States. These two committees met separately on January 23, and 24, and recommended that total exports of frozen tuna to the United States in 1962 be set at 100,000 short tons, of which 65,000 tons would consist of direct exports from Japan proper. The direct ex-

ports are to consist of 30,000 tons of albacore and 35,000 tons of yellowfin, and this means that the Producers Association apparently will continue to have separate export quotas for yellowfin and albacore, rather than one single combined export quota for those two species.

In connection with the reorganization of the Overseas Fisheries Company, which operates the joint Japanese-Malayan tuna canning firm at Penang, Malaya, a vigorous movement to establish Singapore and Penang as transshipment bases appears to be under way. Some quarters believe that transshipments of frozen tuna from the Indian Ocean and Pacific Ocean should also be authorized, like transshipments from the Atlantic Ocean. Should the Japanese Fisheries Agency grant approval, it appears that transshipments of catches from those two oceans will likely be regulated under the present export quota for tuna exported directly to the United States from Japan proper. This is considered only logical since at the present time tuna taken in the Indian and Pacific Oceans by Japanese vessels can only be landed in Japan (except for special cases, like Samoa and Espiritu Santo, New Hebrides) and those fish are then exported to the United States under the quota covering direct exports from Japan. (Suisan Tsushin, Japanese periodical, January 17, 20, and 25, 1962.)

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FROZEN TUNA EXPORT QUOTAS FOR 1962:

The Board of Directors of the Japan Export Frozen Tuna Producers Association held a meeting on February 21, 1962, to draft regulations governing 1962 quotas for frozen tuna and frozen swordfish to be exported to the United States, according to a translation of a news item in the Japanese periodical Suisan Tsushin of February 22, 1962. At the meeting, a special 5,000-ton adjustment quota for direct export from Japan proper was newly established. This quota is in addition to the 65,000-ton quota (albacore tuna, 30,000 short tons; yellowfin tuna, 35,000 short tons) for direct export to the United States from Japan proper. Allocation of the 5,000-ton quota will be discussed at the next directors' meeting. The 1962 export quotas adopted at the meeting are:

## 1. Frozen tuna exports from Japan proper:

- a. Frozen albacore tuna quota, 30,000 short tons. Of this, 26,000 tons are to be allocated on the basis of past performance; 3,900 tons unassigned (so-called free quota); and 100 tons reserved.
- b. Frozen yellowfin tuna quota, 35,000 short tons. Of this, 28,000 tons are to be allocated on the basis of past performance; 6,900 tons unassigned (free quota); and 100 tons reserved (above allocations include yellowfin loins).
- c. Tuna loin quota, 5,000 short tons. Of this, 4,000 tons are to be allocated on the basis of past performance;



## Japan (Contd.):

935 tons unassigned (free quota); 15 tons reserved; and 50 tons for adjustment purposes.

d. Special adjustment quota, 5,000 short tons.

2. Transshipments: An aggregate total of 120 trips will be permitted for fishing vessels delivering their catches for transshipment to the United States. Number of trips each fishing vessel can make will depend on its cargo-carrying capacity, like in 1961.<sup>1/</sup>

3. Swordfish export quota, 6,500 short tons. Of this, 5,500 tons are to be allocated on the basis of past performance; 975 tons unassigned (free quota); and 25 tons reserved.

<sup>1/</sup>According to Suisan Tsushin, March 9, 1961, fishing vessels with cargo capacities of less than 150 tons shall be limited to 5 trips (with special permission from the Association's Board of Directors, up to 8 trips); 150 to 250-ton capacity fishing vessels shall be restricted to 4 trips each; 250 to 350-ton capacity vessels 3 trips each; and vessels with over 350-ton capacity 2 trips each.

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### FROZEN TUNA LOINS EXPORT QUOTA RAISED:

At a loins committee meeting of the Japanese Export Frozen Tuna Manufacturers Association held in February 1962, it was agreed that the export shipment quota to the United States of tuna loins for the new year should be fixed at 5,000 short tons instead of the original planned quota of 4,800 tons. At the meeting some committee members proposed that the present ratio of the 5-percent "free quota" should be raised by a wide margin. (Translated from a Japanese periodical, February 14, 1962.)

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### ATLANTIC OCEAN TUNA FISHING CONDITIONS:

A total of 67 Japanese tuna long-line fishing vessels were reported operating in the Atlantic Ocean early in February 1962. This was an increase in the Atlantic tuna fleet of 4 vessels over January, when the fleet totaled 63 vessels. In October 1961, there were 49 Japanese vessels operating in the Atlantic Ocean; in November 53 vessels; in December 62 vessels. The rapid increase in fleet strength is the result of the Japanese vessels concentrating on the albacore tuna fishing grounds in the central and western half of the Atlantic Ocean off the Brazilian coast between 3° S. to 15° S. latitude. In early January 1962 tuna vessels in the 500-ton class were reported to be catching an average of 7-8 metric tons of albacore per day. After mid-January, the catch leveled off to about 5-6 tons per day.

Albacore catches drastically declined in February and vessels of the 500-ton class were catching an average of about 2 tons of albacore per day. As a result, the Japanese long-liners were leaving the albacore grounds and moving to the yellowfin grounds in the eastern Atlantic Ocean between 2° S. to 5° S. latitude. Early reports from those vessels which commenced yellowfin fishing indicated fishing was good, with vessels in the 500-ton class averaging 6 to 8 metric tons of yellowfin per day. The good catches of yellowfin contrast sharply to the low catches made in the spring of 1961. (Translated from the Japanese periodical Suisan Tsushin, February 6 and 8, 1962.)

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### YAIZU FISHERY LANDINGS, JANUARY 1962:

Fishery landings at Yaizu (leading Japanese tuna fishing port) in January 1962 totaled 7,732 metric tons valued at 833 million yen (US\$2.3 million), an increase in value of 11.7 million yen (\$32,500) over January 1961. Approximately 70 percent of the landings consisted of tuna and tunalike species. On the basis of quantity, Indian bluefin led all other species with 1,800 tons, followed by 1,480 tons yellowfin, and 1,319 tons big-eyed. Landings of tuna and tunalike fish totaled about 600 metric tons less than in the same month last year. Ex-vessel prices were high,

Species	Quantity	Ex-Vessel Value	
		1,000 Yen	US\$1,000
Indian bluefin . . .	1,751	179,336	498
Australian bluefin .	58	8,341	23
Big-eyed . . . . .	1,319	152,278	423
Albacore . . . . .	883	112,535	313
Yellowfin . . . . .	1,477	186,318	517
Swordfish . . . . .	52	7,405	20
Skipjack . . . . .	40	3,083	9
Mackerel . . . . .	680	29,186	82

averaging 119 yen per kilogram (\$300 per short ton). The total value of the landings was 647 million yen (\$1.8 million). January 1961 landings of tuna and tunalike fish averaged 102 yen per kilogram (\$257 per short ton). Translated from the Japanese periodical Suisan Keizai Shimbun, February 7, 1962.

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### EX-VESSEL TUNA PRICES:

The following prices were bid on February 23, 1962, for tuna landed by the Japanese



## Japan (Contd.):

Type	Price	
	Yen/Kg.	\$/Short Ton
Yellowfin (round):		
Large (over 100 pounds) . . . .	114	287
Medium (80-100 pounds) . . . .	123.8	312
Small (20-80 pounds) . . . . .	123.8	312
Albacore . . . . .	134.8	340
Fillets:		
Yellowfin . . . . .	124.4	314
Big-eyed . . . . .	108-110.6	272-279

tuna vessel No. 8 Asama Maru, which caught a total of 250 tons of tuna and tunalike fish, including a small quantity of shark, according to a translation from the Japanese periodical Suisan Keizai Shimbun of February 24, 1962.

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## SEEKS RELAXATION OF UNITED STATES CANNED TUNA IMPORT RESTRICTIONS:

Japanese Minister of Agriculture and Forestry Kono planned in late February 1962 to submit a request to U.S. Secretary of the Interior Udall calling for the relaxation of United States canned tuna import restrictions, according to the Japanese periodical Nippon Suisan Shimbun, February 2, 1962. The Japanese Minister reportedly wants to increase Japan's tuna exports to the United States and promote the development of the Japanese tuna fishing industry.

Japanese tuna exports to the United States consist mainly of canned tuna in brine and frozen tuna. Annually, the equivalent of 135,000 short tons of tuna, consisting of 95,000 tons of frozen tuna and the remainder canned tuna in brine, are exported to the United States. Japanese tuna exports to the United States generally have increased in spite of various complications that have hampered this trade, but the periodical points out that this does not warrant optimism since there are continual movements in the United States to restrict Japanese tuna imports.

The United States restricts imports of canned tuna in brine by means of a tariff quota. Imports of canned tuna in brine in any existing year not exceeding 20 percent of the total United States canned tuna pack during the preceding calendar year are dutiable at 12.5 percent ad valorem. Imports exceeding 20 percent of the U.S. canned pack are dutiable at 25 percent ad valorem. Minister Kono reportedly intends to concentrate his efforts on seeking relaxation of this tariff quota system.

As for frozen tuna, the United States does not apply any trade restrictions on this product and Japan voluntarily regulates its frozen tuna exports to the United States. Japanese Minister Kono is reported to have discussed frozen tuna exports with Secretary Udall during the U.S.-Japan Economic Council meeting held in November 1961 in Tokyo. Reportedly, both Minister Kono and Secretary Udall shared each other's views concerning promotion of Japanese frozen tuna exports to the United States. Japan plans to bring this matter up for discussion once again at the forthcoming meeting of the U.S.-Japan Economic Council in May 1962. Details concerning the manner in which Japan will submit its proposal to the United States apparently have not yet been worked out, but the Japanese Fisheries Agency stated that this matter will likely be brought up for detailed study at the coming U.S.-Japan meeting in May, along with the subject of promoting Japan's frozen tuna exports to the United States.

The Japanese periodical Suisan Tsushin, February 12, reported that Minister Kono delivered a note to Secretary Udall requesting that the United States relax tuna import restrictions. This note is stated to have touched on present

United States tariff restrictions on imports of canned tuna in oil and in brine and expressed the hope that the increase in tuna consumption in the United States will promote the development of both the Japanese and United States tuna industry, and indicated Japan's desire to seek a harmonious export trade relationship with the United States.

Japan is expected to bring this matter up once again at the U.S.-Japan Economic Council meeting scheduled to be held in May. However, inasmuch as the United States tuna import tariffs were negotiated under the General Agreement on Tariffs and Trade (GATT), it is expected that this matter will be formally negotiated by the GATT at the request of Japan.

\* \* \* \* \*

## THIRD SALE OF CANNED TUNA IN BRINE FOR EXPORT TO U. S.:

Following a meeting on February 8, 1962, the Japan Canned Foods Exporters Association announced that 100,000 cases of canned white meat tuna in brine and 80,000 cases of canned light meat tuna in brine for export to the United States were to be offered at the third canned tuna sale, deliveries to be com-

Japanese Sales of Canned Tuna in Brine for U. S. Market, 1962

Type	Third Sale	Second Sale	First Sale	Total
	(No. Cases) . . . . .			
White meat tuna . . . .	100,000	130,000	130,000	360,000
Light meat tuna . . . .	80,000	130,000	100,000	310,000
Total . . . . .	180,000	260,000	230,000	670,000

pleted by April 15. Export prices are the same as for the first two sales--\$9.95 per case (No.  $\frac{1}{2}$ , 7-oz., 48's) f.o.b. Japan for white meat tuna and \$7.70 per case (No.  $\frac{1}{2}$ , 7-oz., 48's) f.o.b. Japan for light meat tuna. (Suisan Shimbun Sokuho, February 9, 1962.)

\* \* \* \* \*

## FISHING COMPANIES PLEDGE NOT TO PACK TUNA CANNED IN BRINE FOR EXPORT AT OVERSEAS BASES:

The Japanese Fisheries Agency early this year requested all fishing companies to submit a memorandum to the Agency promising that they "will not engage in the manufacture and export of canned tuna packed in brine" at their overseas bases. The Japanese fishing firm, which plans to establish a fishing base at Curacao with facilities for processing fish sausages but not canned tuna, submitted a memorandum to this effect, but attached the condition that its promise becomes void in the event that the Fisheries Agency permits Japanese overseas companies, other than the joint Japanese-Malayan cannery and base located at Penang, Malaya, to engage in the manufacture and export of canned tuna in brine. (Suisan Tsushin, February 17, 1962.)

\* \* \* \* \*

Japan (Contd.):

### EXPORTS OF CANNED TUNA IN OIL, 1961:

Data compiled by the Japanese Canned Tuna Producers Association show that a total of 1,406,127 cases of canned tuna in oil were approved for export in 1961. This was 40 percent more than 1960 exports, which totaled 1,002,280 cases. For the period April-December 1961 a total of 1,146,805 cases were approved for export, compared to 824,093 cases for the same period in 1960, and 1,136,863 cases in 1959--a new record. (Translated from the Japanese periodical Suisan Tsushin, February 10, 1962.)

Note: Total exports from Japan on a calendar or full fiscal-year basis are somewhat greater.

\*\*\*\*\*

### EXPORTS OF TUNA SPECIALTY PACKS:

Data compiled by the Canned Tuna Producers Association show that Japanese exports of specialty canned tuna products (other than those packed in brine and oil) totaled 168,443 cases for the period April-December 1961. Exports to West Germany totaled 132,239 cases, the Netherlands 14,287 cases, Belgium 9,871 cases, Canada 6,532 cases, and England 2,000 cases. (Suisan Tsushin, February 12, 1962.)

Japanese Exports of Tuna Specialty Packs, April-December 1961

Product	April-December
	No. Actual Cases
Vegetable tuna .....	97,285
Jelly tuna .....	43,955
Seasoned tuna .....	21,100
Curry tuna .....	3,150
Tuna in tomato sauce .....	2,135
Others .....	818
Total .....	168,443

\*\*\*\*\*

### FIRM TO CHANGE PRICE AND PACK SIZE OF ITS CANNED TUNA SPECIALTY PRODUCTS:

The Japanese fishing company which is packing canned curried tuna, sandwich tuna, and vegetable tuna, plans to change the pack size and price of those canned tuna specialty products. The firm began to market those products in June 1961. Currently, those products are packed in Japanese No. 3 cans, 48 cans per case and retail for 65 yen (US\$0.18) per can. Comments regarding their quality and flavor have been good, but the firm feels that the products have not gained consumer acceptance because of their

retail price and plans to lower the price and to pack the products in Japanese No. 2 cans, 48 cans per case, instead.

The production target for 1962 (April 1962-March 1963) has been set at 150,000 cases of No. 2 cans. In 1961, the Japanese firm sold about 80,000 cases of No. 3 canned curried tuna, sandwich tuna, and vegetable tuna. This was far below sales expectations. (Suisan Tsushin, February 13, 1962.)

Note: See Commercial Fisheries Review, February 1962 p. 72.

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### FROZEN SWORDFISH EXPORTS TO UNITED STATES INCREASED:

The Japan Frozen Foods Exporters Association decided to increase the frozen broadbill swordfish quota for export to the United States by 1,000 short tons, according to a translation of a news item in the Japanese periodical Suisan Tsushin of February 10, 1962. As a result, the quota became 6,500 tons. Of the additional 1,000 tons, 544 tons will be allocated on the same basis as for the fixed base quota and 446 tons of the remaining 456 tons will be allocated through a method to be decided by the committee in the future.

Japanese exports of frozen swordfish totaled 5,126 tons April 1, 1961, through January 31, 1962, applicable to the export quota.

Note: See Commercial Fisheries Review, January 1962 p. 54.

\*\*\*\*\*

### FISHING COMPANY TO ESTABLISH WHALING AND CRAB FISHING BASE IN ARGENTINA:

A large Japanese fishing company's trawler Taiyo Maru (500 gross tons) was surveying the waters off the island of Tierra del Fuego situated near the southern tip of Argentina, according to the Japanese periodical Suisan Tsushin of February 6, 1962. Should this survey prove favorable, the Japanese firm will proceed with its plans to establish a whaling and crab fishing base on Tierra del Fuego. Plans call for starting construction of shore facilities in March, and for base operations to commence in the fall.

The Taiyo Maru, which began exploring the waters south of Argentina in November 1961, expected to continue its survey until March. This vessel was to be joined by two

## Japan (Contd.):

of the Japanese firm's whalers, the Seki Maru No. 12 and the Fumi Maru No. 12, operating out of Brazil. They will investigate whale resources in Argentine waters.

Pending outcome of the surveys, the Japanese firm plans to invest approximately 100 million yen (US\$278,000) for the construction of processing facilities on Tierra del Fuego Island. Two whalers would be assigned to the island base to catch 600 sei and sperm whales per year, the frozen whale meat to be exported to Europe. In addition, the Japanese firm hopes to pack at this base the equivalent of 20,000 cases of crabs, which would be frozen for export to the United States.

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#### ANOTHER TRAWLER TO FISH IN WEST AFRICAN WATERS:

In January 1962, a new 1,500-ton stern trawler entered the Japanese distant-water trawl fishery to operate in West African waters. A sistership is scheduled for completion in May 1962. Hitherto, the company operating these vessels has not been engaged in the West African trawl fisheries. (Suisan Keizai Shimbun, Japanese fishery periodical, January 13, 1962.)

\*\*\*\*\*

#### TRAWLERS EXTEND OPERATIONS TO SOUTH AFRICA:

Since late 1961, the Japanese company operating trawlers in the vicinity of the Canary Islands, off Northwestern Africa, had expanded its operations to South Africa. By early 1962 this company expected to have 4 vessels, ranging in size from 750 to 1,500 gross tons, trawling off the coast of Cape Town. One of the vessels had been operating in New Zealand waters.

Large quantities of sea bream were being taken off South Africa, and as of mid-January the company had shipped about 3,500 metric tons to Japan by commercial freighter. (Translated from the Japanese periodical Shin Suisan Shimbun Sokuho, January 17, 1962.)

\*\*\*\*\*

#### PLANS TO INVESTIGATE EAST AFRICAN FISHERIES CHANGED:

The Japanese Overseas Fisheries Cooperative Association has temporarily cancel-

led plans to investigate the fisheries of Kenya, Uganda, Tanganyika, and Zanzibar. The four African nations requested the postponement until they have established a "customs union" or similar economic arrangement. Instead, the Japanese survey team will go to Saudi Arabia and Lebanon.

The activities of the Overseas Association are financed by the Ministry of International Trade and Industry (MITI). That government agency contributes about 75 percent of the Association's annual budget. (Source: Various Japanese periodicals.)

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#### INVESTMENT POSSIBILITIES IN WEST AFRICA STUDIED:

The Japanese Ministry of International Trade (MITI) will finance a study of investment possibilities in the fisheries of the West African coast during the fiscal year April 1, 1962, to March 31, 1963. This is the fourth major overseas survey sponsored by MITI since the 1959 study of Pakistan. The study will be conducted by the Japanese Overseas Fisheries Cooperative Association. (Suisan Keizai Shimbun, January 11, 1962.)

\*\*\*\*\*

#### GOVERNMENT PLANS SURVEY TO DEVELOP NEW FISHING GROUNDS:

The Japanese Fisheries Agency's budget for FY 1962 (April 1962-March 1963) includes funds for conducting exploratory studies in the southeastern Pacific Ocean area and in the Okhotsk Sea.

To study the distribution and migration of fish stocks in the southeastern Pacific Ocean, the Fisheries Agency plans to have its research vessel Shoyo Maru (603 gross tons) survey the area east of 100° W. longitude between 10° and 20° S. latitude off the coast of Callao, Peru, and the area east of 110° W. longitude in the vicinity of 30° S. latitude off the coast of Valparaiso, Chile.

For the Okhotsk Sea survey, the Fisheries Agency plans to charter a 400-ton class trawler to explore the waters off the western coast of the Kamchatka Peninsula, mainly off Icha, between May-July 1962. (Suisan Tsushin, Japanese periodical, January 17, 1962.)

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## Japan (Contd.):

CANNED SARDINE EXPORT  
PRICES REDUCED:

The Japan Canned Sardine and Saury Sales Company in February 1962 announced a reduction on canned sardine export prices.

Japanese Export Prices of Canned Sardines Packed in Tomato Sauce					
Can and Case Size	New Price Per Case		Former Price Per Case		
	Yen	US\$	Yen	US\$	
1-lb. oval, 24's	1,225	3.40	1,275	3.54	
8-oz. oval, 48's	1,450	4.03	1,500	4.17	
5-oz. tall, 100's	2,300	6.39	2,400	6.67	
8-oz. oblong, 48's	1,475	4.10	1,525	4.24	

At the same time, the Sales Company announced that it will raise the price of jack mackerel packed in tomato sauce, 8-oz. oval 48's, from 1,175 yen (US\$3.26) per case to 1,200 yen (US\$3.33). (Suisan Tsushin, February 22, 1962.)

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SARDINE INDUSTRY TRENDS AS OF  
MID-FEBRUARY 1962:

Japanese sardine fishing centered around the Sendai Bay on the Sanriku coast. As of February 10, 1962, it was still going on and the fishing extended south to Onahama, Fukushima Prefecture, and north to Ohfunado, Iwate Prefecture, where many schools were seen close to shore and heavy landings were continuing at every fishing port.

Sardine packers at each location mentioned were reported to have packed some 200,000 cases up to February 10. The amount packed was being allocated half for export and half for domestic needs. (Suisan Tsushin, Japanese periodical, of February 10, 1962.)

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## CANNED SARDINE EXPORT QUOTA, 1962:

The directors of the Japan Export Canned Sardine Producers Association met on February 15, 1962, to discuss the

Table 1 - Allocation of Japanese Canned Sardine Export Quota			
Type	FY 1962 1/	FY 1961 2/	
		.... (1,000 Cases) ....	
Allocation of export quota:			
Quota based on past performance	450	525	
Unassigned quota	250	225	
Quota for newly-authorized exporters	5	5	
Reserve quota	300	250	
Total export quota	1,005	1,005	

1/April 1, 1962, to March 31, 1963.  
2/April 1, 1961, to March 31, 1962.

method of allocating canned sardine export quotas for fiscal year 1962 (April 1962-March 1963), according to a translation from the Japanese periodical *Suisan Tsushin* of February 16, 1962. Quota allocation recommendations drafted at the meeting for submission to the Association's special general meeting on March 5 and 6 are shown in table 1.

Table 2 - Sales of Japanese Export Canned Sardines in FY 1961 (As of February 12, 1962)

Can and Case Size	Carry Over	Consignments	Sold	On Hand
..... (In Cases) .....				
1-lb. oval, 48's	3,445	209,504	148,218	80,703
8-oz. oval, 48's	13,396	135,736	110,867	36,774
5-oz. tall, 100's	45	45,031	18,760	25,865
No. 4, 48's 1/	-	153	7	144
No. 1 tall, 48's	217	15,786	16,003	-
8-oz. oblong, 96's	-	3,240	3,215	-
ENT 2/	2,271	83	2,348	-
Total	19,374	409,533	299,418	143,486

1/Japanese can size--dimension: 214 x 406.

2/Code for Japanese can size. We are unable to decipher code.

As of February 12, 1962, over 400,000 cases of export canned sardine were consigned to the Japan Canned Sardine and Saury Sales Company. Consignments and sales of export canned sardine for FY 1961 (April 1, 1961-March 31, 1962) as of February 12 are shown in table 2.

\*\*\*\*\*

FACTORYSHIP FISH MEAL OPERATION  
OFF ANGOLA SUCCESSFUL:

The Japanese fish meal factoryship *Ren Shin Maru* (14,094 gross tons), operating in the waters off Angola, Africa, finished fishing on February 12, 1962. The vessel was expected to arrive in Japan sometime near mid-March. The Director of the firm operating the factoryship returned to Japan from Angola on February 19, 1962. He stated that it was worthwhile diverting the fish meal factoryship to Angolan waters during the off-season in the Bering Sea bottom fishery, rather than keeping it tied up in port, and reported that his firm had concluded a 4-year contract with an Angolan company to produce fish meal. He stated that the fish meal produced by the *Ren Shin Maru* contained about 70 percent protein, with a high of 72 percent. Locally-produced fish meal is reported to contain an average of 65 percent protein. The firm's Director made the following comments on his Angola trip:

1. The *Ren Shin Maru* fulfilled its production target for frozen fish and fish meal. Production of fish meal totaled 5,000 metric tons. Protein content of fish meal averaged 70 percent, attaining a high of 72 percent. Therefore, in quality, the *Ren Shin Maru's* fish meal is superior to that produced locally from sardine, which contains an average of 65 percent protein.

2. Sardine landings vary considerably. Therefore, in order to handle large landings, factoryships operating in Angolan waters must be equipped with plants having large holding capacities. Fish were purchased from about 40 Angolan fishing vessels at a price of 4,800 yen (US\$13.33) per metric ton. Some of the vessels were operating without any contract and were selling their catches to the *Ren Shin Maru* only because shore processing plants could not handle their catches.

3. The sea bottom off the Angolan coast is rocky with very little shelf. Thus, large trawlers are not practical but smaller trawlers of about 20 tons may be utilized profitably in scattered areas. Fish suction pumps were used on the factoryship for the first time. Difficulties were en-



## Japan (Contd.)

countered during the first few days of operation, but efficiency gradually improved to the point where 30 tons of fish could be suctioned in 20-30 minutes.

4. Agreement with the Angolan company was based on attainment of fixed production goals, and profits were to be adjusted when catches exceeded or fell below production targets. The Angolan company, which is not a fishing firm but deals in automobiles and loans, is emphasizing a technical association rather than the present system of sharing profits.

5. During *Renshin Maru's* operation in Angolan waters, rumors were heard about 3 Japanese fish meal factory-ship fleets and 4 trawlers being sent to Angolan waters. While the rumors proved groundless, Japanese firms must avoid excessive competition among themselves at this time when future prospects of the enterprise are difficult to foresee, particularly with respect to marketing. (*Shin Suisan Shimbu* *Sokuhō*, February 22, 1962.)



## Malaya Federation

## MARKET FOR CANNED SARDINES AND MACKEREL:

Price consideration is an important factor in marketing canned sardines and mackerel in the Federation of Malaya. Imports from Japan are popular for price reasons, and quality is acceptable. In some selective markets, better quality is demanded with price not as great a factor. The more expensive types are imported from the United States (sardines, pilchards), Norway and Denmark (sardines, pilchards), and anchovies from Italy. Some stores reported they discontinued United States brands largely due to the price differential. It is believed that United States suppliers can make a good showing in the Malayan market, but they need to conduct or arrange for an importer to conduct some type of selling campaign, usually not attempted in Malaya. There is a product-quality minded market in Malaya as is proved every day in many lines by appropriate salesmanship.

Wholesale prices reported by the trade in Malaya also indicate the more typical types of packs preferred: horse mackerel from Japan in tomato sauce, 15-ounce can, 48 cans per case, M\$6.63 per dozen (US\$8.75 a case); pilchards from United States and Japan packed in tomato sauce, 15-ounce can, 48 cans per case, M\$26 to M\$28 (US\$8.58-9.24) per case; sardines from United States packed in tomato sauce, 15-ounce can, 48 cans per case, M\$36 per case (US\$11.88); Norwegian sar-

dines packed in oil, 3½-ounce can, 100 cans per case, M\$0.47 each (US\$15.51 a case); anchovies from Italy packed in olive oil, 2-ounce can, packed 100 cans per case, M\$9.60 per dozen (US\$12.67 a case).

The Malayan full import duty on canned mackerel, sardines, and anchovies is 25 percent ad valorem. But there is a preferential duty of 10 percent which applies only to imports from British Commonwealth countries eligible for preferential rates under the Imperial Preference System--this includes United Kingdom, Canada, Australia, New Zealand, India, and Pakistan. Commodity import controls have been relaxed for almost all imports, including fish items, and only an open general license is needed. Exchange licensing continues, but there is no exchange problem at present and licenses are freely granted. (United States Embassy, Kuala Lumpur, report of February 7, 1962.)

Note: Values converted at rate of M\$1 equals US\$0.33.



## Mexico

## SHRIMP FREEZING PLANT AT GUAYMAS PLANNED:

At the end of January 1962, the press reported that a Mexico City firm (owners of several fishery enterprises) plans to construct a large shrimp freezing plant, as well as an ice house and storage facilities in an area near the PEMEX storage depot at Guaymas, Sonora, on the Mexican west coast. Construction was expected to begin soon, with completion of the freezing plant scheduled for August this year. The cost of the plant will be an estimated 8 million pesos (US\$640,000).

At a later date, the same company is reportedly considering the installation of a plant for the manufacture of fish flour and the construction of a dock on the same site.

The source for this story which received fairly wide circulation was reported to be the Director General of the Mexican firm. This is the first venture of this firm into Sonora where several shrimp-freezing plants are already located. The firm owns a fishery enterprise in Topolobampo, Sinaloa, as well as others in Escuinapa, Mazatlan, and Culiacan, Sinaloa, and Salina Cruz, Oaxaca.

This is the first result of the Governor's drive to attract more industry into the State



## Mexico (Contd.):

of Sonora which began late in 1961. Further investments are expected to be announced in the near future. (United States Consulate, Nogales, Sonora, February 14, 1962.)



## Netherlands West Indies

JAPANESE FISHING BASE  
AT CURACAO DELAYED:

A large Japanese fishing firm, which has been planning on establishing a fishing base complete with cold-storage and fish sausage processing facilities at Curacao Island, Netherlands Antilles (in the Caribbean Sea north of Venezuela), since the summer of 1961, is yet unable to proceed with the construction of the base, although it has already received approval from the Netherlands and Japanese Governments. This is reportedly due to the Japanese Finance Ministry's delay in approving the Japanese firm's application to float bonds to finance the venture.

Originally, the Japanese firm had planned to establish the Curacao Development Company, with an authorized capital of 404,880,000 yen (US\$1,125,000) and a capital investment of 101,220,000 yen (US\$281,000). The company was to operate the cold-storage facilities (one of 1,500-ton capacity and another of 100 tons) and sausage plant (daily output 50,000 pieces) at the base, as well as handle transportation arrangements. However, late last year, the Japanese firm decided to establish a subsidiary company, to be called the Curacao Transportation Company, with a capital investment of 4,000,000 yen (US\$11,100), to handle all transportation arrangements.

The Finance Ministry had originally planned to approve the Japanese firm's initial application by the end of last year. Reportedly, a Curacao bank had already authorized a loan of 101,220,000 yen (US\$281,000) for capital investment and was awaiting the Bank of Tokyo's guarantee. However, the Japanese firm's change in plan prompted the Finance Ministry to review the entire Curacao venture, thus delaying the processing of the Japanese firm's application. (Suisan Tsushin, February 17, 1962.)



## Norway

BUYERS' STRIKE ANNOUNCED BY  
FISH PRODUCERS ASSOCIATION:

The Fish Producers Association, the latter part of February 1962, proclaimed a buyers' strike in North Norway, from East Finnmark to Helgeland, because of dissatisfaction with prices fixed by the Fishermen's Association. Except for Lofoten, no freezing plants were affected. (News of Norway, February 22, 1962.)

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FISHERIES TRENDS:

North Norway's Fish Price Dispute Settled: The North Norway fish price dispute was settled early in March 1962. In regard to the Lofoten area, a tripartite agreement called for an extraordinary state subsidy to reduce the price of cod in the period from February 28 to March 10, subject to approval by the Norwegian Parliament.

Whaling: Norway's 7 Antarctic whaling expeditions processed only 204,350 barrels of oil in the first 54 days of the 1962 season. This was 175,440 barrels less than 8 Norwegian expeditions processed in the first 53 days of last season. The 1962 season opened 16 days earlier than the previous season. The Norwegians this year are using one less factoryship and 10 less catching boats in their Antarctic whaling operations.

Norwegian whale catches have been considerably below the national quotas during the past two seasons.

Women Fishermen: Norway had 43 women commercial fishermen in 1960, reports the Central Bureau of Statistics. Five women gave fishing as their only occupation. (News of Norway, March 1, 1962.)

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COD FISHERY TRENDS,  
JANUARY 1-FEBRUARY 17, 1962:

The 1962 season's total landings of cod in Norway during January 1-February 17, 1962, amounted to 14,676 metric tons, compared with 19,865 tons for the same period last year.

Bad weather had hampered cod fishing to that date this season. Prospects for improved landings were good if the weather im-

## Norway (Contd.):

proved. Of this year's landings, 2,320 tons were sold for drying, 4,669 tons for salting, 3,412 tons for sale fresh, and 4,275 tons for filleting. In 1961 in the same period 3,195 tons had been sold for filleting. This season's fishery also yielded 5,152 hectoliters (479 metric tons) of cod-liver oil and a quantity of cod roe. (Fiskets Gang, February 21, 1962.)

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## NORWEGIANS CLAIM STERN TRAWLER BETTER THAN SIDE TRAWLER:

The Norwegian stern trawler (Hekktind of Melbu, Norway), during its last 7 months of fishing in 1961 landed about 1,200 metric tons of fish valued at 1.5 million Norwegian kroner (US\$210,000). Crew shares for the period amounted to about 18,700 kroner (\$2,618).

A preliminary review shows that the Hekktind's catch is about 20 percent greater than that of the side trawlers of the same company, according to its report to Lofotposten. (Translated from Fiskaren, Norwegian periodical, January 17, 1962, by Regional Fisheries Attache, United States Embassy, Copenhagen.)



## Philippine Republic

## WHOLESALE PRICES FOR

## CANNED SARDINES AND MACKEREL:

The most popular canned sardine product in the Philippines is that packed in tomato sauce. A survey of major Manila markets on January 27, 1962, shows that prices increased about 10 to 20 percent since the Philippine peso was freed on January 21, 1962.

Manila Wholesale Prices for Canned Sardines and Mackerel, January 27, 1962

Product	Pesos/case	US\$/case
<b>Canned Sardines:</b>		
Tomato sauce, 15-oz. ovals, 48 cans per case	31-33	10.33-11.00
Tomato sauce, 5-oz. cans, 100 cans per case	18.50	6.17
Spanish-style in olive oil, spiced, 5-oz. cans, 100 cans per case	48	16.00
Spanish-style in tomato sauce or olive oil, 5-oz. cans, 100 cans per case	38.50	12.83
Mackerel in natural oil, 8-oz. cans, 48 cans per case	18.50	6.17

Note: Converted at free rate of 3.00 Philippine pesos equal US\$1.

Sardines are the most popular canned fish product in the Philippines; they form an important part of the diet of low-income groups. There is a definite preference for United States brands of sardines, but the United States has lost much of the market, apparently because of problems of supply. While price is an important factor to the large numbers of low-income consumers of sardines, United States brands can still command some premium.

Executive Order No. 5, of January 21, 1962, which became effective 30 days later, amends section 16.04 of Republic Act 1937 by reducing the tariff on canned fish (with the exception of tuna) from 15 percent to 8 percent ad valorem.

On January 21, 1962, a free floating rate was established for the peso. There is a new requirement, however, that cash deposits be made returnable after 4 months, to accompany the establishment of letters of credit. Canned fish, considered an essential item by the Philippine Government, generally receives preferential treatment. For example, the opening of a letter of credit for the importation of canned fish requires a cash deposit of only 25 percent as compared with deposits of up to 150 percent for some luxury items. NAMARCO, a Government corporation, imports large quantities of sardines free of duty and taxes for distribution by selected Filipino retailers. (United States Embassy, Manila, February 13, 1962.)

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## NEW IMPORT TARIFFS IMPOSED ON CANNED FISH:

According to information received by the Japan Canned Foods Exporters Association, the Philippine Government has established new import tariff rates for canned fishery products.

Philippine Islands 1962 Tariff Rates on Canned Fish Imports

Canned Product	Tariff Rate
	% Ad Valorem
Mackerel	8
Salmon	8
Sardine	8
Anchovy	8
Tuna	15
Squid	20
Abalone & other fishery products	50 or 1 peso per kilogram <sup>1</sup>

In addition, the special import duty, previously imposed at the rate of 15 percent, was lowered to 6.8 percent. Sardine and salmon are exempt from the special import duty. Anchovy packed sardine style and mackerel packed salmon style are also expected to be exempt from the special duty. Bonds for imported canned fishery products must be posted within 120 days at the following rates: 25 percent for mackerel, salmon, sardine, and anchovy; 150 percent for tuna.

Philippine Islands Imports of Canned Fishery Products, 1961

Origin	Sardine	Mackerel	Squid	Anchovy	Saury
	(Cases)				
United States	69,771	10,768	6,081	220	-
Japan	133,730	236,566	107,858	9,400	2,072
South Africa	2,239,782	128,452	-	-	-
Hong Kong	-	4,250	-	-	-
Europe	110,853	-	950	-	-
<b>Total</b>	<b>2,554,136</b>	<b>238,036</b>	<b>114,887</b>	<b>9,620</b>	<b>2,072</b>

<sup>1</sup>/The specific rate of 1 peso per kilogram at 2.75 pesos equal US\$1 amounts to 16.5 U. S. cents a pound.

<sup>2</sup>/The total for imports of canned mackerel was 434,036, but the data by countries only adds to the total shown.

### Philippine Republic (Contd.):

squid, abalone, and other fishery products. Information on saury and jack mackerel is not available.

Reportedly, the National Marketing Corporation (NAMARCO) of the Philippine Government is negotiating with the Philippine Central Bank to apply the former official exchange rate of 2 pesos to 1 U.S. dollar for products currently imported by NAMARCO. As soon as a decision is made on this matter, NAMARCO is expected to announce its first offer to purchase canned sardine. (From the Japanese periodical *Suisan Tanshin*, February 10, 1962.)



### Senegal

#### TUNA PROGRAM REORIENTED:

The Government of Senegal has reoriented the tuna program for the season November 1961 to May 1962, as a result of previous disappointing seasons. The catch goal for the 1960/61 season was 13,500 metric tons, of which 10,000 tons were to be canned for the French market and 3,500 tons for the United States and other foreign markets. Although the Senegalese tuna industry has a canning capacity of 30,000 tons a year, only about 8,000 tons were produced in the 1960/61 season when 56 "clippers" and 10 "freezers" from France fished for Senegal. This year France will send only 26 "clippers" and no "freezers." (The French "clippers" are small vessels of 15-ton capacity with no refrigeration.)

Senegal will not be able to fill the quota of canned tuna that France has agreed to buy; additional sources of fish are being sought. In 1962, the Government hopes to purchase five freezers as a nucleus for her own fishing fleet. A proposed government-private corporation under Senegal's Development Plan will attempt to raise the necessary funds with assistance from French and German sources.

In 1963 it is hoped that 10 additional freezers can be purchased. A new fishing pier, now under construction at Dakar with a loan of about US\$2 million from the European Economic Community, is scheduled for completion in 1963. By that time the canning industry will be reorganized with a single cannery to be constructed on the pier. It is also planned to assist some of the existing canneries to convert their operations to sardine canning, primarily to sell in African markets to the south. (United States Embassy, Dakar reports of February 13, March 24, May 29, and December 18, 1961.)



### Sierra Leone

#### IMMIGRATION OF FOREIGN FISHERMEN PROHIBITED:

In recent years Sierra Leone fishermen have been demanding protection from competition by Ghana (Fanti) fishermen who have been settling permanently along the coast to fish in the waters off Sierra Leone.

Late in December 1961 the Sierra Leone Government published an order reading: "The immigration to Sierra Leone by land, sea, and air of any fisherman whatsoever who is a native foreigner is hereby prohibited." (The term native is interpreted to mean any national of an African country.) The Ministry of International Affairs, however, has authority to grant written permits for such immigration. (United States Embassy, Freetown, report of December 27, 1961.)



### Somali Republic

#### JAPANESE INTERESTED IN SOMALI FISHERIES:

As a result of an exchange of trade delegations with the Somali Republic, the Japanese have expressed an interest in the fisheries potential of that country. In January 1962, a six-man Japanese delegation visited fishing centers in the province of Migiurtinia on the Gulf of Aden and the Indian Ocean. (United States Embassy, Mogadiscio, January 5 and 17, 1962.)



### South Africa Republic

#### TUNA FISHING COMPANY ESTABLISHED:

South Africa's new tuna industry early this year reached another stage in its development with the formation of a R200,000 (US\$280,000) tuna corporation. The Cape company will carry on the work started by its three equal shareholder firms.

The South African move towards tuna fishing on a commercial scale has been a steady process, but as of early 1962 there have been no substantial landings or large exports.

The catch is still being exported frozen to overseas canneries.

## South Africa Republic (Contd.):

Meanwhile, research is continuing into the resource in Cape waters, and the use of the Japanese long-line method, coupled with temperature and other observations by the Division of Sea Fisheries vessels, is revealing a clearer picture of the best tuna fishing areas off South Africa. (The South African Shipping News and Fishing Industry Review, January 1962.)

\* \* \* \* \*

NEW ORGANIZATION FORMED  
TO MARKET CANNED FISH:

Another South African canned fish marketing organization was created in December 1961 with the formation of Silversea Sales (Pty.) Ltd., a joint venture by two well-established firms at Saldanha Bay and two on the St. Helena Bay coast.

The new company will handle all local and export sales of the four firms. The marketing organization started operation in January 1962.

The four canneries involved are among the most modern and best-equipped on the Cape west coast and steps have been taken to apply strict quality control in the canneries, so that the new marketing organization will be in a position to offer "prime quality" products. (The South African Shipping News and Fishing Industry Review, January 1962.)



## Spain

NEW COLD-STORAGE  
PLANT FOR BERMEO:

Early in 1962 a new cold-storage plant started to operate in the fishing port of Bermeo, Vizcaya, Spain. The plant has a storage capacity of 5,000 cubic meters capable of maintaining a temperature of -32 degrees F. and two freezing tunnels (with temperatures of -50 degrees F.) capable of handling 60 metric tons of fish in 24 hours. The purpose of the plant is to offer the fishermen of Bermeo the possibility of storing their catch if the terms of sale are unfavorable when the boats land.

The firm, which has storage facilities capable of maintaining a temperature of -42

degrees F. in Bilbao, Vigo, Malaga, and Zaragoza, reports that it has orders for three times its present capacity and that it is beginning to construct an expansion of the new plant to a capacity of 15,000 cubic meters.

The firm provides freezing and cold storage. It does not package and distribute the fish. (United States Consulate, Bilbao, report of February 7, 1962.)

\* \* \* \* \*

## NEW FISH PACKING PLANT IN BILBAO:

A new fish processing and canning plant is being built in Santurce, Bilbao, Spain, by the Federacion de Cofradias de Pescadores de Bajura de Vizcaya, which represents the 4,200 coast fishermen of the province of Vizcaya. The purpose of the plant is to handle the anchovy, tuna, bonito, and mackerel species that are caught seasonally in nearby waters. The machinery for the plant has been contracted for locally. Construction of the plant started early in February 1962.

Since in the past fishermen have had to sell anchovies at very low prices, or even to throw them back into the sea, during the height of the season because there were insufficient preservation facilities, it is hoped that the plant will be finished in time to operate during the anchovy season which is scheduled to begin at the end of March. The plan is that the plant will initially be devoted to preparing anchovies in salt (in barrels and in tins) and fillets of anchovies in pure olive oil (in tins); an annual capacity of 1,000 metric tons of anchovies is planned.

When finished the plant will consist of a basement and two floors totaling 1,500 square meters. During the anchovy season the plant should work two shifts of 8 to 10 hours with a total work force of 200 women and 10 men. Profits will be distributed among the supporting fishermen's associations. (United States Consulate, Bilbao, report of February 2, 1962.)



## Sweden

INTERNATIONAL FISHERIES  
FAIR HELD AT GÖTEBORG:

The first Swedish International Fisheries Fair was held in the Swedish Trade Fair's exhibition halls (Svenska Massan) November 2-12, 1961, at Göteborg.



### Sweden (Contd.):

The increasing significance of the Swedish fishing industry and the large interest shown in fisheries in general at the exhibitions held in Copenhagen, Denmark, and Bergen, Norway, made it possible to realize the plans for the exhibition, which was the first of its kind in Sweden.

The consensus was that the scope of the fair was well planned. The arrangement of the exhibits made it an easy fair to survey.

The fair was open from 10 a.m. to 8 p.m. on weekdays and from 10 a.m. to 7 p.m. on Saturdays and Sundays.

The number of visitors during the 11 days the exhibition was open reached a total of 25,000 persons divided among 15 countries and was higher than expected by the management of the fair. Furthermore, over 50 percent of the visitors were buyers. Several study groups from foreign countries visited the fair.

The number of commercial exhibitors was limited to 200 presenting over 300 firms and organizations of which about 200 were Swedish and 100 were foreign. The following countries were represented at the fair: Belgium, Canada, Denmark, England, Finland, France, Holland, Iceland, Italy, Norway, Poland, Switzerland, and the United States.

The fisheries fair covered all fields of the fishing as well as other industries connected with fishing. An impressive section was found in the industry hall where engines of various types were on display; Diesel engines dominated this section. Engines with 500 horsepower were very much in evidence. They appear to be as common as engines of 100 horsepower about 15 years ago. The largest motor was a Diesel engine of 800 horsepower, built for a Swedish trawler. The cost of this motor is 250,000 Swedish crowns (US\$48,300).

A single-boat floating trawl was on display. This trawl differs from previous constructions inasmuch as the trawl boards continuously have contact with the bottom of the sea. It is reported that the trawl has been tested with good results by one Swedish west coast trawler and that additional trawlers from that area will commence fishing with

this type of trawl. On display were also various kinds of nets, ropes, steel wire, etc.

Exhibited were ice-making machines of various types (three American manufacturers were represented through their local representatives), fork trucks, fish-processing machines (such as skinning machines, filleting machines, and slicing machines), scales, packing machines, and conveyers.

The Swedish West Coast Fishermen's Central Association had an information exhibit about Swedish fishing where statistics showing quantity and value of landings in Sweden and abroad, exports, different types of fish caught, quantity of ice and number of fishboxes consumed, etc., were featured. The exhibit also presented data illustrating the financial loans available to fishermen in some European countries showing that fishermen in England may receive loans making up about 90 percent of the purchase price of a craft, followed by West Germany, Iceland, Denmark, Norway, Holland, and finally Sweden, where the Government loans only comprise between 10 and 20 percent of the purchase value.

Delegations from four countries--Great Britain, France, Poland, and West Germany--visited the fair.

A model of a Polish steel trawler was on display at the fair. The trawler was built by a ship repair yard in Gdynia, and is sold by the Polish export organization. The trawler has a length over-all of 24.6 meters (81 ft.); length between perpendiculars 21.85 meters (72 ft.); breadth moulded 6.57 meters (21 ft.); depth moulded 3.38 meters (11 ft.); draught moulded 2.64 meters (9 ft.); average speed 10 knots; engine output 225 hp.; fresh-water tank 5.6 tons; fuel oil tanks 13.0 tons; number of crew 10 persons.

Note: See *Commercial Fisheries Review*, June 1961 p. 81, April 1961 p. 84.



### U. S. S. R.

#### OCEAN PERCH FISHING IN THE BERING SEA:

Ocean perch fishing in the Bering Sea and the use of that species by the Russians was the subject of an article in the Russian periodical *Rybnoe Khoziaistvo* (December 1961). In part, this is what the article says:



## U. S. S. R. (Contd.):

Russia's fish catch in the Far East has doubled in the past ten years. One of the new and most promising regions is the East and Central Bering Sea. The VNIRO and TINRO scientific expeditions, conducted from 1957 to 1959, played a large part in opening up this new fishing area. The distribution of the main commercial species and the areas of their greatest concentration were studied. After only three years of exploitation, already more than 100,000 metric tons of fish are taken annually in the East Bering Sea. Flounder, until recently, was the most commonly fished species in the Bering Sea. In 1960, the fleet began to catch ocean perch.

Ocean perch is marketed fresh, refrigerated, or frozen. But most of the catch must be frozen because the fish is caught far from consumption areas.

Frozen perch is suitable for fried fillets and boiled perch. From the head and bones a rich fish broth is obtained. Frozen perch can also be smoke-cured. The liver has a high vitamin A content. However prepared, perch is tasty and has a good fat content.

Taking perch in the Bering Sea is rather complicated, requiring catch methods completely different from those used for flounder. Ocean perch appears in small schools. The uneven rocky ocean floor in the area snags the nets, causing a great loss of time. A small concentration of vessels often loses a school. Clouds, bad visibility, strong currents, and lack of radio ships complicate the fishing. Despite all these difficulties, however, we have learned the proper trawling preparations and fishing techniques. In order not to lose the schools, many vessels go after one school. The captains of the trawlers radio each other the school's position and movements.

The 1961 plan or target was for approximately 50,000 tons of ocean perch. In 1962 the catch will increase several times.

Russia will continue to expand ocean perch, flounder, and other fish catches in the Bering Sea. In the future they plan to take no less than 500,000 tons of fish. The Bering Sea will no doubt become the main fishing region of the Far East.

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## BERING SEA FISHERY CATCH, 1960-1961:

In 1961, the Soviets in the Bering Sea registered a spectacular advance with an estimated fishery catch of about 330,000 metric tons--a 122-percent increase over 1960 when about 138,000 tons were taken. Intensified fishing effort by the Soviets in the Bering Sea began in 1955 with the use of modern vessels, including factoryships, according to Rybnoe Khoziaistvo (No. 10, October 1961), a Russian periodical.

Table 1 - Soviet Bering Sea Fishery Catch, 1960-1961

Species	1961 <sup>1/</sup>	1960
	(Metric Tons)	
Flatfish . . . . .	173,100	105,680
Ocean perch . . . . .	48,500	11,700
Saury . . . . .	2/24,440	13,000
Herring . . . . .	68,700	-
Other fish . . . . .	2/14,701	7,820
Total . . . . .	2/329,441	138,200

<sup>1/</sup>Estimated.

<sup>2/</sup>Prorated estimate from 1960 figures.

Table 2 - Soviet Fishery Products Produced from Bering Sea Catch

Product	1961	1960
Frozen fish . . . . .	171,000 tons	117,600 tons
Salted fish . . . . .	55,000 "	50 "
Canned fish (saury) . .	1/	29,200,000 cans

<sup>1/</sup>Not available.

Bering Sea fishing is directed by the Main Administration of Far East Fisheries (Glavdal'vostokrybprom), with headquarters at Vladivostok and branch offices in the Maritime, Kamchatka, and Sakhalin regions.

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## HERRING FLEET INCREASED:

On June 10, 1962, a larger Russian herring fleet is scheduled to leave Murmansk for Iceland in an attempt to increase significantly the herring catch, according to the February 14, 1962, issue of *Fiskaren*, a Norwegian fishery trade weekly. A recently completed report stated that the Russian trawler fleet filled its quota last year, but the herring catch was down. The fishery combine directorate in Murmansk, therefore, placed additional and more modern vessels in the herring fishery. Nets and seines with lighter and thinner twine are to be used. The Russians will depend this year, as earlier, on pair trawlers in the herring fishery, but in the fleet going to Iceland there will be more purse seiners.

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U. S. S. R. (Contd.):

#### U. S. S. R.-NORWAY NEGOTIATIONS ON FISHING RIGHTS:

On February 12, 1962, negotiations on Soviet fishing rights in Norwegian territorial waters were resumed in Moscow at the Soviet's request.

Preliminary talks were held in Oslo in late November 1961 when the U. S. S. R. asked permission to fish Norwegian waters between 6 and 12 nautical miles for a 10-year period. Norway's position was that the U. S. S. R. should grant reciprocal rights to Norwegian fishermen off the Soviet coasts. The Soviets have rigidly maintained that their coastal boundary of 12 miles is a territorial boundary while the Norwegian 12-mile limit zone is a fishing boundary. Moreover, the Soviet commitment to import Norwegian fishery products for several years was thought by the U. S. S. R. to be sufficient compensation to Norway for the fishing rights concession.

The Norwegian delegation has maintained that the reciprocal principle be applied allowing Norwegians to fish within the Soviet territorial boundary between 6 and 12 nautical miles. (News of Norway, November 30, 1961; unpublished sources.)

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#### FACTORY TRAWLERS RETURN TO GEORGES BANK:

Early in February 1962, two large exploratory factory trawlers arrived on Georges Bank fishing grounds. Last year, Soviet fishing vessels were not sighted on those grounds until May.

Boston trawler captains returning from Georges Bank the week of February 18 reported sighting 10 Russian fishing vessels in that area.

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#### NEW FACTORYSHIP JOINS PACIFIC FISHING FLEET:

The Evgenii Nikishin was launched at the Leningrad Admiralty Shipyards in January 1962. This is the second of a new series of factoryships equipped for canning; the first was the Andrei Zakharov (15,000 gross tons and an estimated length of 540 feet). Both factoryships are assigned to the Soviet Far

Eastern Fishing Fleet; the Andrei Zakharov fished for king crab in Bristol Bay during 1961. (Unpublished sources.)

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#### PACIFIC SALMON CAUGHT OFF NORWAY:

Pink salmon (Oncorhynchus gorbuscha) were being taken in 1961 along the Kola Peninsula and Northern Norway. These fish are the result of successful Russian transplants made in streams flowing into the Barents Sea. The eggs were obtained from the Russian Far East.

In 1956, Soviet scientists, who had been experimenting since the 1930's, transplanted 2.4 million fertilized eggs of pink and chum salmon (O. keta). After these proved insufficient for desired results, 13 million more eggs were transferred in 1957, 19 million in 1958, and 21.6 million in 1959. (The Fishing News, November 10, 1961.)

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#### OCEANOGRAPHIC-FISHERY RESEARCH:

The U. S. S. R. conducts a vast program in which oceanographic studies play a major part in fishery research. The All-Union Scientific Research Institute of Marine Fisheries and Oceanography (VNIRO) coordinates the work of thousands of Soviet scientists, technologists, and other workers engaged in marine research activities. The Soviet research program, by emphasizing exploration of new fishing areas and mechanization of fishing gear, has contributed to the expansion of U. S. S. R.'s high-seas fisheries.

Two major U. S. S. R. research institutes are (1) Polar Research Institute of Marine Fisheries and Oceanography (PINRO), Murmansk, and (2) Pacific Research Institute of Marine Fisheries and Oceanography (TINRO), Vladivostok. Fisheries and oceanography are also studied by other regional institutes, branch research stations, laboratories, and universities.

In 1962, TINRO will conduct major fishery investigations in the western Pacific for the first time. Several vessels will be used to study fishing conditions for mackerel, ocean perch, and tuna. In the northern Pacific, a research team will study fish populations down to 400 fathoms. Other reconnaissance vessels of TINRO will operate in the Sea of Japan, Bering Sea, the Sea of Ok-

## U. S. S. R. (Contd.):

hotsk, and the Indian Ocean. Currently, the trawler Baidar is engaged in studying the distribution and spawning habits of saury in the

Pacific Ocean. (Fisheries Year Book and Directory 1961, British-Continental Trade Press Ltd., London, England; unpublished sources.)



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Marine Resources Advisory Committee Approved by FAO Commission  
(Correction in article in February 1962 issue p. 54)

Information received since this news item was published indicates that the last paragraph (1st complete paragraph in column 2) should be changed to read as follows:

"As approved by Commission II, the Advisory Committee would be composed of not more than 15 fisheries experts, selected after consultation with governments and intergovernmental and other bodies of FAO member countries concerned with fisheries research."

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### RUBBER "PORPOISE SKIN" TO SPEED UP VESSELS

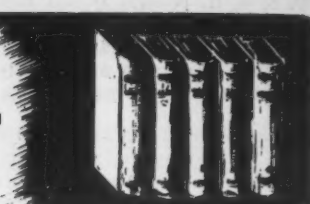
From his observations of the behavior of porpoises and the structure of their skins, a former German scientist, Dr. Max O. Kramer, has developed a new form of rubber coating for ships he claims will allow them to travel faster without any increase in power, or at the same speed with less power than is now required. Normally an object as it moves through the water consumes some 70 to 90 percent of its propulsive energy to overcome the drag due to turbulence created by itself. The application of the coating will, it is claimed, reduce turbulence by some 50 percent in completely submerged bodies.

The coating is in the form of a thin layer of rubber supported on the inside by millions of tiny rubber pillars. Between these pillars interconnecting channels contain a freely-flowing viscous liquid. The outside of the coating is smooth, but the channels give it flexibility and the liquid provides the necessary damping to suppress potential turbulence. A porpoise is similarly covered with a  $\frac{1}{16}$ -inch (1.6-mm.) hydraulic skin which is elastic and ducted.

Experiments have already been carried out on the hulls of motor-boats and there appears to be a considerable advantage in rubber coating of this type on the kind of craft that plane on the water. (Canadian Fisherman, vol. 48, 1961, no. 3, p. 36.)



# FEDERAL ACTIONS



## Department of the Interior

### FISH AND WILDLIFE SERVICE

#### BUREAU OF COMMERCIAL FISHERIES

### REVISED FEES PROPOSED FOR FISHERY PRODUCTS INSPECTION SERVICES:

Higher fees for fishery products inspection services are proposed by the U.S. Department of the Interior. It is proposed to amend title 50 of the Code of Federal Regulations by amendment, addition, and deletion of sections that specifically apply to fees and charges for inspection services. The purpose of the proposed changes as published in the March 6, 1962, Federal Register is to achieve a higher degree of uniformity in the assessment of fees and the method of charging for services rendered. The change is necessary to offset the normal costs to the Bureau of Commercial Fisheries for rendering the inspection service.

This is the first official proposed change in the rate of inspection fees since the Bureau assumed responsibility for the conduct of the inspection service from the U.S. Department of Agriculture in July 1958. The proposed changes in the rates are a reflection of the increased operating costs to the Bureau in maintaining the program on a sound and self-supporting basis as required under the authority by which this program is conducted. All future proposed changes in rates necessitated by Federal pay acts and increased operating costs will be announced in the Federal Register.

For continuous inspections, the fee for regular time would be \$4.20 per hour; for overtime \$5.00 per hour. Also included is a schedule of lot inspection fees for officially and unofficially drawn samples.

Amendment is proposed of the following sections under Inspection Services: Sections 260.70 (Schedule of fees), 260.71 (Inspection services performed on a resident basis), 260.72 (Fees for inspection service performed under cooperative agreement), 260.73 (Disposition of fees for inspections made under cooperative agreement), and 260.76 (Charges based on hourly rate not otherwise provided for in this part). Proposed is the addition of a new section--260.81 (Readjustment and increase in hourly rates of fees). It is proposed to delete section 260.75.

Interested persons could submit written comments, suggestions, or objections on the proposed changes before April 5, 1962.

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### PROCESSOR ACCOUNTABLE FOR REMOVAL OF USDI SHIELDS FROM MISLABELED FISHERY PRODUCTS PACKAGES:

The Department of the Interior proposed a change in its regulations for U.S. standards for grades of processed fishery products. The change would add a new provision to re-

quire accountability by the processor for the removal or stripping of official U.S. Department of the Interior (USDI) shields from packages of mislabeled fishery products. The proposal was published in the February 24, 1962, Federal Register.

U.S. standards for grades of many fishery products require that the final grading be conducted on the packaged frozen product. End product grading is performed by U.S. Department of the Interior inspectors when fishery products are produced under continuous inspection. When a processor elects to include an approved Federal shield or identification mark as part of the printed label, a calculated risk is taken that despite this labeling the product will not meet the requirements of the standard upon final inspection. When this situation occurs the labels bearing the official identification marks must be stripped from the packages.

The new procedure for removal of labels bearing inspection marks is described in a new paragraph (e) added to §260.86 (Approved Identification) of the regulations for processed fishery products. At the time a lot of fishery products is found to be mislabeled and the labels on the packages are not removed immediately, the procedure will be: (1) The processor, under the supervision of the inspector, shall clearly and conspicuously mark all master cases in the lot by means of a "Rejected by USDI Inspector" stamp provided by the Department. (2) The processor shall be held accountable to the Department for all mislabeled products until the products are properly labeled. (3) Clearance for the release of the relabeled products shall be obtained by the processor from the inspector.

Interested persons had until March 26, 1962, to submit comments, suggestions, or objections to the U. S. Bureau of Commercial Fisheries.

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### SELECTIONS MADE FOR FISHERY RESEARCH FELLOWSHIP GRANTS:

Seventeen two-year graduate educational grants in aquatic sciences have been awarded to 12 universities by the U. S. Fish and Wildlife Service's Bureau of Commercial Fisheries, the U. S. Department of the Interior announced on March 4, 1962. This new program seeks to attract and assist the scientific manpower necessary to further the Bureau's objectives and also aid the National Oceanographic Program, particularly in the field of fishery research.

Selections were made by Bureau officials and a panel of consultants from leading universities and private research organizations who advised the Bureau on the relative qualifications of institutions and faculties within each of five general professional fields in which highly qualified scientists will be needed in the near future. These are: physical or chemical oceanography, biological oceanography or marine biology, fishery biology, taxonomy, and food technology.

Invitations to participate in the program recently were sent qualified educational institutions. Applications were received from 25 universities for the support of 77 students. Although nearly all applications were deemed qualified, the small number of grants available necessitated the decision to support



only one research endeavor in a specific field in each institution.

The universities selected, the number of grants awarded each, and the research fields involved are:

University of Washington, three grants, physical or chemical oceanography, fishery biology, and food technology; Oregon State University, two grants, physical oceanography and food technology; University of California, two grants, physical oceanography and biological oceanography; University of Hawaii, one grant, fishery biology; University of Michigan, one grant, taxonomy; Massachusetts Institute of Technology, one grant, food technology.

University of Rhode Island, one grant, physical oceanography or biological oceanography; Yale University, one grant, biological oceanography or fishery biology; The Johns Hopkins University, one grant, physical or chemical oceanography; Duke University, one grant, marine biology; University of Miami, two grants, physical oceanography and fishery biology; and Texas Agricultural and Mechanical College, one grant, physical oceanography.

Graduate students who will receive the grants will be chosen by the universities. All tuition and fees will be paid, and each student will receive \$3,000 for living expenses on a 12-months basis. Married students with children will receive an additional \$1,000 family allowance.



## Small Business Administration

### GOVERNMENT AID FOR DISASTER VICTIMS IN MIDDLE ATLANTIC AREA:

The Small Business Administration has announced that its low-interest, long-term disaster loans will be made available to property owners in all areas of New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, and possibly Florida, that suffered damage from high tides, rain, or floods caused by the early March storms on the Eastern seaboard.

Information concerning the loans to help residents restore their homes and business establishments, including shore-based facilities of the fishing industry, may be obtained from the following SBA offices:

Regional Office  
42 Broadway  
New York, N. Y.

Branch Office  
Rm. 611, Calvert Bldg.  
Baltimore, Md.

Regional Office  
Jefferson Bldg.  
1015 Chestnut St.  
Philadelphia, Pa.

Branch Office  
Independence Bldg.  
West Trade Street  
Charlotte, N. C.

Regional Office  
900 N. Lombardy St.  
Richmond, Va.

Branch Office  
1745 Sumter St.  
Universal Bldg.  
Columbia, S. C.

Temporary offices to receive loan applications are located in Atlantic City, Ship Bottom, and Wildwood, New Jersey, and Rehoboth Beach, Del. Additional temporary offices were to be established. SBA disaster loans are made at 3 percent interest with terms up to 20 years for repayment.

The Department of the Interior Fisheries Loan Fund available for fishing vessel construction and operation contains no provision for disaster loans. However, loans for the replacement or repair of vessels in the disaster areas can be made in accordance with the regular provisions under the Fisheries Loan Fund regulations. These loans are made at 5 percent interest for periods up to 10 years.



## Department of State

### AGENCY FOR INTERNATIONAL DEVELOPMENT

#### ASSISTANCE TO UNITED STATES BUSINESS FOR FOREIGN INVESTMENT SURVEYS:

Procedures for carrying out a Congressional authorization to encourage United States business to undertake surveys of investment opportunities in less-developed countries were announced on March 12, 1962, by the Administrator of the Agency for International Development (AID).

The procedures permit AID to share with private investors up to 50 percent of the cost of pre-investment surveys. AID cooperation in helping to finance such surveys was authorized by Title IV of the Act for International Development of 1961 and is designed to stimulate further investment by United States private enterprise in the newly-developing countries.

A total of \$1,500,000 is available for the cooperative enterprises during the remainder of the current fiscal year (ends June 30, 1962).

The new authority will be used to obtain surveys for potential United States investors who are directly interested in taking advantage of pre-investment surveys. It is in addition to the general authority of AID to finance surveys in cases in which no immediate investment interest is in prospect.

The initiative for pre-investment surveys may come from United States private investors, United States Government agencies through AID, or from the governments of the newly-developing countries. The surveys would explore and analyze such matters as market potential and profitability, plant location, raw material availability, labor supply, and engineering feasibility.

The procedures will operate in the following manner:

If the initiative for a survey comes from a potential private investor, AID will reimburse the investor 50 percent of the survey's cost if the investor decides against proceeding with the investment. In this case, the survey would become the property of AID and AID could make the survey available to other potential investors. In the event



the survey is used by the investor who initiated it, it would become his property and he would assume the entire cost of the survey.

If the initiative for the survey comes from the AID agency itself or from the government of a friendly less-developed country, AID will reimburse the potential investor selected for the project 50 percent of the cost regardless of whether he decides to proceed with it. If the investor decided to proceed, the survey would become his property. If he decided against proceeding, it would become AID's property for such use as the Agency deemed appropriate.

Procedures to be followed for pre-investment surveys are outlined in the Agency's Policy Guideline No. 1, Investment Surveys, issued March 1, 1962. For a copy of the Guideline and further information, write to the Private Enterprise Division, Office of Development Financing, Agency for International Development, Washington 25, D. C.



## Eighty-Seventh Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and



allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

**ALASKA FISHERIES:** A statement by Senator Gruening of Alaska before the Subcommittee on Interior and related agencies of the Senate Committee on Appropriations, March 13, 1962, was printed in the Congressional Record of that same date (pp. 3567-3584). As part of the statement there is a section on Alaska fisheries. In addition there is included a summary of United States funds expended on creating, or developing, or rehabilitating the fisheries of 21 foreign nations.

On March 19, 1962, the House and Senate were presented with a joint resolution of the Legislature of the State of Alaska (Senate Joint Resolution 44) urging the Congress of the United States to appoint a special joint Congressional Committee to investigate the Alaskan fishing industry and the necessity for Federal financial support; that the Federal Government allocate emergency funds immediately to support intense scientific research programs in Alaska to aid the conservation and improvement of the fisheries. The resolution was referred to the Senate Committee on Commerce and the House Committee on Rules.

**ANTIDUMPING ACT AMENDMENT:** H. R. 10479 (Tupper) was introduced in the House February 28, 1962, to amend certain provisions of the Antidumping Act, 1921, to provide for greater certainty, speed, and efficiency in the enforcement thereof, and for other purposes. Also introduced in the House on March 5, 1962, H. R. 10534 (Curtin) and H. R. 10626 (Philbin) March 8,

1962; all bills were referred to the Committee on Ways and Means. Similar to several other bills previously introduced.

**FISHING VESSEL DISASTER LOANS:** H. R. 10729 (Boykin) was introduced in the House on March 14, 1962, to provide disaster loans to fishing vessel owners and operators adversely affected by failure of the fishery resource, and for other purposes. Would authorize the Secretary of Interior to make loans to fishing vessel owners or operators where he finds that a fishery production or resource disaster, or where other unforeseen disaster arising from natural causes, has caused a need by such owners or operators for credit that is not available from commercial banks, cooperative lending agencies, or other sources on terms reasonable to meet such needs. Referred to the Committee on Merchant Marine and Fisheries.

**FISH PROTEIN CONCENTRATE:** Senator Saltonstall on February 21, 1962, in the Senate brought to the attention of that body the current conflict of whole fish protein concentrate or fish flour. He stated, in part, "It seems regrettable to me that the Food and Drug Administration should interpose objections to this product..."

"The Department of the Interior is on record in favor of this product. The U. S. Patent Office has issued at least three patents on it, and this required a legal finding that the invention will be new and useful. Our civil defense officials are aware of the reliable stability and nutrient qualities of this food, and 10 Members of this body have spoken out in favor.

"I am advised that official objection to the substitute standard offered by the Food and Drug Administration will be filed on today and that a public hearing will be requested.

"I associate myself with this petition, and with my colleagues to urge that all agencies of the Federal Government unite on a scientific and forward-looking answer to this question..."

Senator Saltonstall included (in the Congressional Record of February 21, 1962, p. 2508) as part of his remarks some statements made by people in the field of nutrition on fish protein concentrate. He pointed out that the statements are being filed as an appendix to the petition.

On March 1, 1962, Senator Young of Ohio referred to the fish protein concentrate studies. He requested and was granted permission to have reprinted in the Congressional Record on March 1, 1962 (p. 2900) two articles which appeared in the Celina (Ohio) Daily Standard on fish protein concentrate.

Senator Douglas in the Senate on March 8, 1962, stated that he had been informed by the Food and Drug Administration that his appeal filed in opposition to the proposed order for a standard of identity on fish flour had been one of three successful appeals. Food and Drug further informed Senator Douglas that a public hearing will be held when an impartial, competent hearing examiner is obtained. The Senator's appeal in the form of a letter to the Department of Health, Education, and Welfare was printed in the Congressional Record of March 8, 1962 (p. A1764).

H. R. 10587 (Bates) introduced to the House on March 7, 1962, to amend clause (3) of section 402(a)

of the Federal Food, Drug, and Cosmetic Act. Would amend chapter 4--Food--section 402 (Adulterated Food) of the Federal Food, Drug, and Cosmetic Act as amended which spells out what makes the food adulterated. It would provide that processed seafood products can be produced from whole fish. To the particular portion of the section which now reads . . . "(3) if it consists in whole or in part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for food;" the bill would add the following exception: "but no processed seafood product shall be deemed to consist of any such substance or to be otherwise unfit for food because such processed seafood product is derived from whole fish, provided such product is processed under sanitary conditions and after processing is nutritious and in no manner harmful to the health of consumers thereof." Identical bills H. R. 9101 and H. R. 9102 were introduced in the House on September 7, 1961.

**GAME AND FOOD FISH CONSERVATION IN DAM RESERVOIRS:** The Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries held hearings February 7, 1962, on H. R. 2722, to establish a research program in order to determine means of improving the conservation of game and food fish in dam reservoirs. Testimony was heard from Representative Miller. On the same date the bill was passed over without prejudice by the Committee.

**INDIAN FISHING RIGHTS:** H. J. Res. 657 (Westland) introduced in the House on March 12, 1962, a joint resolution regarding Indian fishing rights; to the Committee on Interior and Insular Affairs. Proposes to solve the problem of treaty or nontreaty Indians fishing off the reservation in violation of the State regulations. In furtherance of the purposes of any treaty with American Indians, the States involved are authorized to enact and to enforce laws of a regulatory nature concerning the time and manner of fishing outside an Indian reservation that are necessary for conservation of fish, and that are equally applicable to Indians and all other citizens without distinction.

**INTERIOR APPROPRIATIONS:** The Senate Committee on Appropriations Interior Subcommittee, February 26, 1962, began hearings on fiscal 1963 budget estimates for the Department of the Interior, and related agencies, with testimony from Secretary of the Interior Stewart Udall. On March 2, 1962, testimony on funds for the Fish and Wildlife Service was heard from the Special Assistant to the Commissioner, Director, Bureau of Commercial Fisheries, and the Director, Bureau of Sport Fisheries and Wildlife. On March 13, 1962, the Subcommittee concluded its hearings on fiscal 1963 budget estimates for the Department of the Interior, and related agencies. Subcommittee recessed subject to call.

**Department of the Interior and Related Agencies Appropriations for 1963** (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Eighty-Seventh Congress, Second Session, on appropriations for the Department of Interior except Bonneville Power Administration, Bureau of Reclamation, Southeastern Power Administration, and Southwestern Power Administration), 1,576 pp., printed. Included is the testimony for funds for the Fish and Wildlife Service: the Commissioner's Office and its two bureaus, Sport Fisheries and Wildlife, and Commercial Fisheries.

The House on March 15, 1962, granted permission to the Committee on Appropriations to file a report by midnight March 16, 1962, on the bill making appropriations for the Department of Interior and related agencies for fiscal year 1963. The House Committee on Appropriations met in executive session on March 16, 1962, on Interior and related agencies appropriations for 1963.

H. R. 10802 (Kirwan) introduced in the House March 16, 1962. The bill was reported favorably (H. Rept. 1446) to the House by the Committee on Appropriations on the same date. The Committee recommended a total of \$64,164,000 for Fish and Wildlife Service funds for FY 1963, against the budget estimate of \$64,646,000 and \$51,651,150 for 1962 appropriations. The Bureau of Commercial Fisheries portion for FY 1963 is \$24,150,000, against \$25,293,000 for the budget estimate and \$21,643,000 for 1962 appropriations; the Bureau of Sport Fisheries and Wildlife portion for FY 1963 is \$39,650,000 as compared with \$38,989,000 for the budget estimate and \$29,644,150 for fiscal year 1962; the Office of the Commissioner amount for FY 1963 is \$364,000, the same amount as the budget estimate and the appropriations for 1962.

The House on March 20, 1962, passed, by voice vote, without amendment, H. R. 10802, making appropriations for the Department of the Interior and related agencies for fiscal year 1963.

**IRRADIATED FOOD PROGRAM:** The Joint Committee on Atomic Energy's Subcommittee on Research, Development, and Radiation on March 6, 1962, began hearings on the status of the food irradiation program of the Atomic Energy Commission and the Army. Testimony was heard from personnel of both agencies.

**METRIC SYSTEM STUDY:** On March 5, 1962, the House passed H. R. 2049 (Miller) to provide that the National Bureau of Standards shall conduct a program of investigation, research, and survey to determine the practicability of the adoption by the United States of the metric system of weights and measures.

**NATURAL RESOURCES CONSERVATION MESSAGE FROM THE PRESIDENT:** On March 1, 1962, the Senate and House received a conservation message from the President. In the introduction the President, in part, states: ". . . We depend on our natural resources to sustain us--but in turn their continued availability must depend on our using them prudently, improving them wisely, and, where possible, restoring them promptly. We must reaffirm our dedication to the sound practices of conservation which can be defined as the wise use of our natural environment; it is, in the final analysis, the highest form of national thrift--the prevention of waste and despoilment while preserving, improving, and renewing the quality and usefulness of our resources. . . ." The President in indicating the progress made this past year said: ". . . A full-scale attack on one of the most destructive forms of waste--water pollution--has been mounted under the 1961 amendments to the Water Pollution Control Act." He also stated that he proposed to convene a White House Conference on Conservation this year to seek the best possible advice in prescribing what must be done in the future on conservation of natural resources. The major sections of the message cover outdoor recreation resources; water resources; public lands; soil, watershed, and range resources; timber resources; minerals; power; and research and technology. Under the

section of outdoor recreation resources the President recommends approval of legislation along the lines of S. 543, as approved by the Senate, to authorize a study of the ocean, lake, and river shorelines of the Nation.

Under the section on research and technology the President states: "...Implicit in the conservation thesis of wise use, improvement, preservation and restoration of our resources is the basic requirement of greater scientific knowledge and improved resources management. The catalog of resource problems set forth in this message demonstrates the importance of intensive research in the resources field. In response to the demonstrated need for concentrated and coordinated research, this administration has requested the National Academy of Sciences to undertake a thorough evaluation of the potentials and needs for research underlying the development and use of natural resources; directed the Federal Council for Science and Technology to coordinate the wide-ranging research programs of participating agencies to strengthen and unify our total governmental research effort in the natural resources field; and directed the Council of Economic Advisors to stimulate research in the economics of resource use.

"Coordinated research programs already underway and worthy of special note are the following:

"Oceanography: Our intensified effort to expand our knowledge and understanding of the vast resources held by the oceans through basic research and surveys of geologic and living resources will surely result in extending our known resource base, with encouraging prospects for improving our standard of living and adding protein-rich marine products to the diets of the hungry people of the world.

"Sports Fisheries and Wildlife: Studies of diseases and pesticides are continuing and efforts to solve the problems of passing migratory fish over high dams are being accelerated. A new laboratory has been opened on the Atlantic coast to study the management of salt-water sport fish--the basis of a growing industry..."

The message (printed as H. Doc. No. 348) was referred by the House to the Committee of the Whole House on the State of the Union and referred by the Senate to the Committee on Interior and Insular Affairs.

**NORTH PACIFIC AND BERING SEA FISHERIES:** The House on March 12, 1962, received a memorial of the Legislature of the State of Alaska, memorializing the President and the Congress of the United States relative to the initiation of Federal studies and programs regarding the condition and exploitation of the North Pacific and Bering Sea fisheries; referred to the Committee on Merchant Marine and Fisheries.

The Senate on March 13, 1962, was presented with a House Joint Resolution 30 from the Legislature of the State of Alaska; referred to the Committee on Commerce. The resolution memorializes the President and the Congress of the United States relative to the initiation of Federal studies and programs regarding the condition and exploitation of the North Pacific and Bering Sea fisheries.

**NORTH PACIFIC FISHERIES COMMISSION:** The House and Senate on March 19, 1962, received a resolution of the Senate of the State of Alaska (Senate Res-

olution 47) commending the work of the International North Pacific Fisheries Commission. The resolution most highly commends the intergovernmental cooperation and accomplishment of the International North Pacific Fisheries Commission in its efforts to conserve and beneficially utilize the North Pacific fisheries through fishery and oceanographic research, and pledges Alaska's full support to the Commission and the Federal Government for the furtherance of its work, and urges that the financial support for its activities be expanded through the efforts of the President and the Congress of the United States. Referred to the House Committee on Merchant Marine and Fisheries and the Senate Committee on Commerce.

**NORTH PACIFIC FISHERIES PROBLEMS:** Problems of the North Pacific Fisheries, Part I (Hearings before the Merchant Marine and Fisheries Subcommittee of the Committee on Commerce, United States Senate, Eighty-Seventh Congress, First Session), 257 pp., printed. Contains hearings held October 4, 1961, at San Rafael, Calif., and October 12, 1961, at Seattle, Wash. Statements were presented by Government personnel and members of the fishing industry.

Problems of the North Pacific Fisheries, Part II (Hearings before the Merchant Marine and Fisheries Subcommittee of the Committee on Commerce, United States Senate, Eighty-Seventh Congress, First Session), 646 pp., printed. Contains hearings held on Oct. 13, 16, 17, 18, 20, 21, 24, 25, 26, and 27, 1961. Testimony was received on the problems of the North Pacific fisheries; and H. R. 7490, an act for the protection of marine mammals on the high seas and for other purposes; and supplemental testimony on S. 1230, to amend the Saltonstall-Kennedy Act so as to establish an additional fund for fishery research programs and fisheries rehabilitation and development projects and for other purposes. The hearings were held in the following locations: Petersburg, Dillingham, Homer, Naknek, Fairbanks, Anchorage, Cordova, Juneau and Ketchikan, Alaska.

**OCEANOGRAPHY:** The Subcommittee on Oceanography of the House Committee on Merchant Marine and Fisheries met February 27, 28, and March 1, 1962, to study the operation of the Subcommittee on Oceanography of the Federal Council of Science and Technology. On February 28 testimony was heard from the Assistant Secretary of the Navy for Research and Development regarding the operations of the Subcommittee on Oceanography of the Federal Council for Science and Technology. On March 2, 1962, the Subcommittee concluded a study of operation of the Subcommittee on Oceanography, Federal Council for Science and Technology. Testimony was heard from officials of the departmental subcommittee. The Subcommittee met again on March 13, 1962.

Two bills concerning oceanographic research are now pending before the Subcommittee: S. 901 which was passed by the Senate last year, with amendments, would establish a national 10-year program of oceanographic research and surveys; H. R. 4276 would establish a National Oceanographic Council.

**OYSTER BROOD STOCK PURCHASES:** The House Committee on Merchant Marine and Fisheries Subcommittee on Fisheries and Wildlife Conservation on March 7, 1962, reported favorably to the full committee, H. R. 7336 (amended). In the amended bill the Secretary of the Interior is authorized with respect to those States

where he finds that excessive mortality of oysters presents an immediate and substantial threat to the economic stability of the oyster industry in such area or region, to acquire oyster brood stock that he believes possesses resistance to the causative agent of such excessive mortality. The purchase of oyster brood stock by the Secretary shall be conditional upon the participating State or States paying one-third of the cost. The amended title of the bill shall be "A bill to promote the production of oysters by propagation of disease-resistant strains, and for other purposes."

The House Committee on Merchant Marine and Fisheries March 15, 1962, met in executive session and ordered reported favorably to the House H. R. 7336 (amended). The Committee on March 19, 1962, reported the bill favorably (H. Rept. 1449) to the House; referred to the Committee of the Whole House on the State of the Union.

**POTOMAC RIVER COMPACT (MD. & VA.) OF 1958:** H. J. Res. 644 (Tuck) introduced in the House February 27, 1962, granting consent of the Congress to a compact entered into between the State of Maryland and the Commonwealth of Virginia for the creation of the Potomac River Compact of 1958; to the Committee on the Judiciary. Would replace an agreement of 1785 on the fisheries of the Potomac River. The Maryland Legislature unilaterally abrogated the old agreement in 1957. Provides for a Commission charged with the establishment and maintenance of a program to conserve and improve the tidewater portion of the Potomac River fishery resources. Commission will have the power to make, adopt, and publish rules and regulations for its meetings, hearings, and administration. Commission may impose an inspection tax, not exceeding 25 cents per bushel, on all oysters caught in the Potomac River, to be paid by the buyer at the point of unloading in Virginia or Maryland. Commission may issue regulations regarding fishing in the area under its control but leasing, dredging, or patent tonging shall be authorized by the Commission only if authorization is granted by joint action of the legislatures of Virginia and Maryland. Regulations and orders of the Commission shall be enforced by the joint effort of the law enforcement agencies of Maryland and Virginia. The laws of Maryland on finfish, crabs, oysters, and clams in the Potomac River as in effect on December 1, 1958, remain applicable in the Potomac River to the extent changed, amended, or modified by regulations of the Commission. Maryland's more stringent conservation laws will be adopted for both states and both will be required to appropriate money for development of oysters and other resources as well as to share joint responsibility for policing the river. On March 13, 1962, a similar resolution, H. J. Res. 659, was introduced in the House. Referred to the Committee on the Judiciary.

**PRICE-QUALITY STABILIZATION:** H. R. 10335 (Madden) introduced in the House February 21, 1962, to the Committee on Interstate and Foreign Commerce; to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes. It provides that the owner of a brand, name, or trademark shall be deemed to retain his property rights therein, regardless of any sale or transfer of the goods to which such brand, name, or trademark relates, and no such sale or transfer shall

be deemed to diminish or extinguish any such rights. The owner of such brand, name, or trademark may revoke the right of the reseller by written notice if the person reselling the goods has employed the goods in furtherance of bait merchandising practices; has advertised, offered for sale, or sold such goods at prices other than such currently established resale prices; or has sold such goods with the intent to deceive purchasers, has published misrepresentation concerning such goods. Similar or identical bills introduced in the House: February 21, 1962: H. R. 10340 (Hollifield); H. J. Res. 636 (Harris); H. J. Res. 637 (Mack); H. J. Res. 639 (Tollefson); March 1, 1962, H. R. 10517 (McMillan); all to the Committee on Interstate and Foreign Commerce. Also introduced in the Senate February 21, 1962, S. J. Res. 159 (Humphrey and others), to the Committee on Commerce.

**SAFETY OF LIFE AT SEA CONVENTION:** The Senate Committee on Foreign Relations held a hearing on February 27, 1962, on Executive K (87th Congress, 1st session), the International Convention for Safety of Life at Sea. The convention was signed in London on January 17, 1960, by the United States and transmitted to the Senate for advice and consent thereto on April 27, 1961. When it enters into force, it will supersede the present convention of 1948 on the same subject. Testimony was heard from the Deputy Assistant Secretary of State for Economic Affairs, and Commandant, U. S. Coast Guard.

**SALTONSTALL-KENNEDY ACT FUNDS REAPPORTIONMENT:** H. R. 10348 (Tupper) introduced in House February 21, 1962, to the Committee on Merchant Marine and Fisheries; to amend the Saltonstall-Kennedy Act so as to establish an additional fund for fishery research programs and fisheries rehabilitation and development projects, and for other purposes. This provides that an amount equal to 30 percent of the gross receipts collected on fishery products imports shall be annually apportioned by the Secretary of the Interior on a 75 percent Federal and 25 percent state matching fund basis among those states with commercial fishing, on a percentage basis. The percentage basis is determined by the ratio which the average of the value of raw fish landed within each state for the three most recent consecutive years plus the average of the value to the manufacture of processed products within each state for the three most recent consecutive years bears to the total average value of all raw fish landed and products processed for the three most recent years within all participating states. One proviso is that funds granted shall not be used to supplant state and local funds made available for the same purpose. It is identical to S. 1230, with one exception--the Tupper bill provides that for every \$75 a state receives from the Federal Government under this bill, it must contribute an additional \$25.

**SHELLFISH PROCESSING EXEMPTION FROM MINIMUM WAGE:** The House Special Subcommittee on Labor conducted hearings February 9, 1962, on H. R. 8927, H. R. 8932, H. R. 8933, H. R. 8930, and similar bills. The Chairman indicated that his Committee would hesitate to open the door to reduce minimum wages, but stated that he recognized the particular problems confronting the blue crab and oyster industries and that the Committee would try through the Department of Labor to find some means of relief.

**TARIFF CLASSIFICATION RESTATEMENT IN TARIFF ACT OF 1930:** The House Committee on Ways and



Means on February 28, 1962, directed the chairman to introduce a clean bill, H. R. 10607, in lieu of H. R. 9189, to provide for the restatement of the tariff classifications provisions and for other purposes. The Committee on March 8, 1962, ordered reported favorably to the House H. R. 10607. On the same date H. R. 10607 (Mills) was introduced in the House.

The House on March 10, 1962, received from the Committee on Ways and Means a favorable report (H. Rept. No. 1415) on H. R. 10607; referred to the Committee of the Whole House on the State of the Union.

**H. Rept. 1415, Tariff Classification Act of 1962** (March 10, 1962, Report of the Committee on Ways and Means, House of Representatives, 87th Congress, 2nd Session, to accompany H. R. 10607), 12 pp., printed. Committee reported bill favorably, without amendment, and recommends passage. Report presents purpose, background, summary, and technical explanation of the bill.

The House Committee on Rules on March 13, 1962, granted a closed rule, waiving points of order, with 3 hours debate on H. R. 10607. The Committee reported to the House on the same date House Resolution 564 (Sisk), for the consideration of H. R. 10607 without amendment (H. Rept. No. 1429), referred to the House Calendar.

On March 14, 1962, the House by a voice vote passed without amendment H. R. 10607. This action followed the adoption by the House of H. Res. 564. H. R. 10607 provides for the adoption and implementation of revised tariff schedules proposed pursuant to law by the U. S. Tariff Commission and to make certain amendments in existing law necessitated by the adoption of such revised schedules. It would accomplish the following: (1) Establish schedules of tariff classification which will be logical in arrangement and terminology and adapted to the changes which have occurred since 1930 in the character of importance of articles produced in and imported into the United States and in the markets in which they are sold. (2) Eliminate anomalies and illogical results in the classification of articles. (3) Simplify the determination and application of tariff classifications.

**TRADE EXPANSION ACT OF 1962:** The House Committee on Ways and Means began public hearings on

March 12, 1962, for the purpose of receiving testimony on the President's reciprocal trade agreements proposal. This proposal is contained in H. R. 9900, the "Trade Expansion Act of 1962," to provide assistance to business enterprises and individuals to facilitate adjustments made necessary by the trade policy of the United States. The purpose is to offset the impact on American businesses, especially smaller businesses, of a more liberal national trade policy by a broad-gauge program of adjustment assistance. Information on presenting testimony to the committee on this proposed legislation was contained in a February 16, 1962, press release titled "Chairman Wilbur D. Mills (D. Ark.), Committee on Ways and Means, House of Representatives, Announces Public Hearings on President's Reciprocal Trade Agreements Proposal." Also, "A Summary of New Trade Legislation as Sent by the President to the Congress, January 25, 1962," accompanied the press release.

**VESSEL COLLISION LIABILITY:** The Senate Committee on Commerce, Subcommittee on Merchant Marine and Fisheries, on March 1 and 2, 1962, held hearings on S. 2313, to unify apportionment of liability in cases of collision between vessels. Testimony was heard from various members of industry and Government administrators. Hearings were adjourned subject to call.

**VESSEL OWNERS LIABILITY:** The Senate Committee on Commerce Subcommittee on Merchant Marine and Fisheries on March 1 and 2, 1962, held hearings on S. 2314 to limit the liabilities of shipowners. Members of industry and Government administrators gave testimony. Hearings were adjourned subject to call.

**VESSEL TRANSFER:** The Senate on March 1, 1962, considered and passed with amendment H. R. 3788, to provide for the transfer of the United States vessel Alaska to the Department of Fish and Game of the State of California. The amendment makes the transfer conditional upon the State of California paying the Federal Government an amount equal to fifty percent of the fair market value of the vessel at the time it was leased by the State in California; it also provides that if the vessel should cease to be used for a public purpose, all right, title, and interest therein shall revert to the United States. This same bill without the amendment passed the House on August 21, 1961.



### FISH EGGS SHIPPED ABROAD

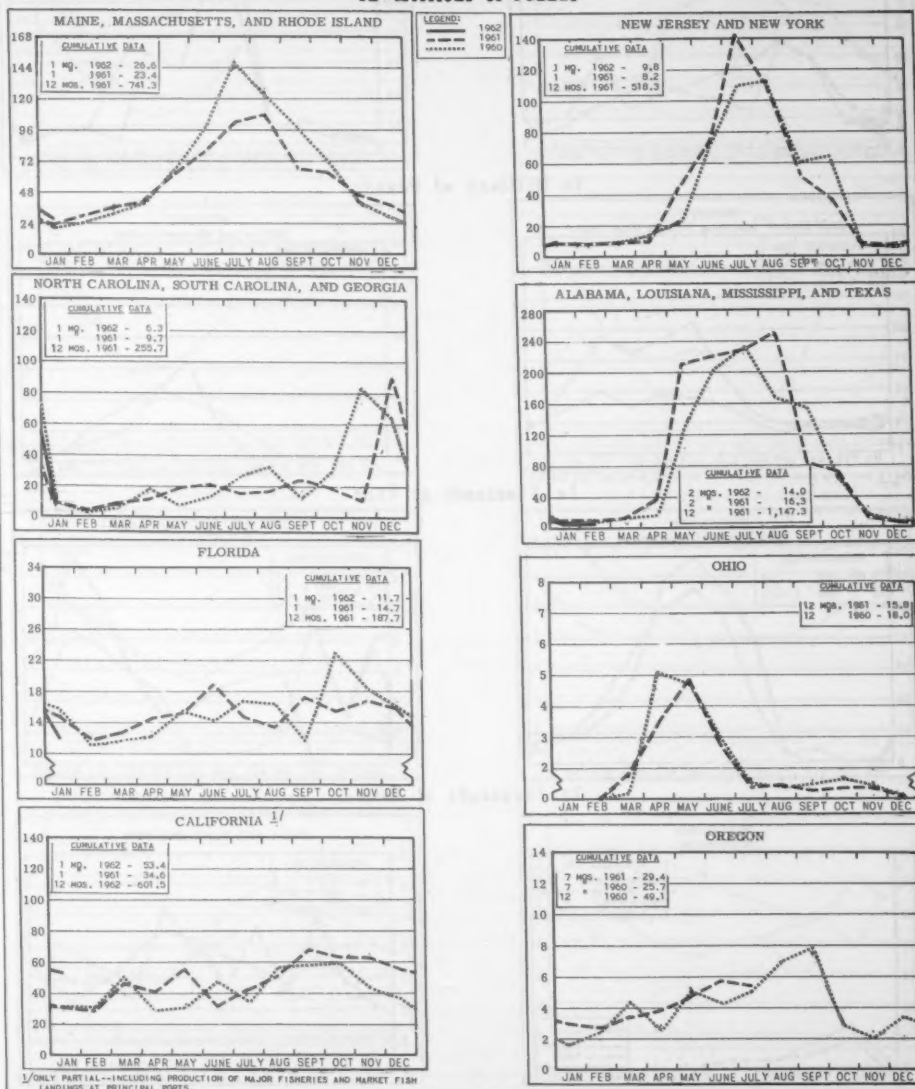
Shipments of trout eggs in 1961 to foreign countries included the following: 14,000 brook trout eggs from Walhalla, S. C., National Fish Hatchery to the Provincial Administration of the Cape of Good Hope, South Africa Republic, and 100,000 rainbow trout eggs from the Wytheville, Va., National Fish Hatchery to Nova Scotia. A shipment of 100,000 rainbow trout eggs from the Winthrop, Wash., National Fish Hatchery to the Ministry of Agriculture, San Jose, Costa Rica, left Portland, Oreg., by air on February 6, 1962, and arrived in San Jose the following day.



# FISHERY INDICATORS

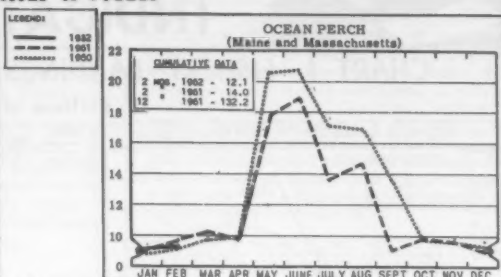
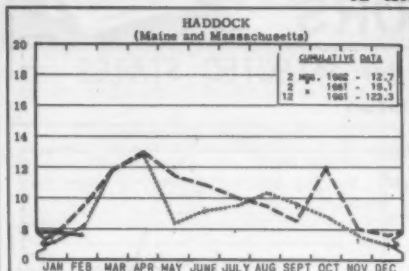
## CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

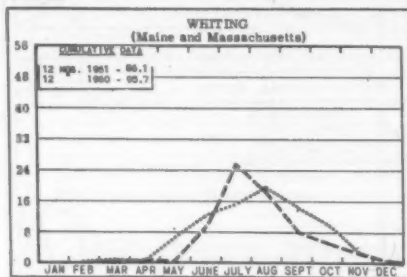
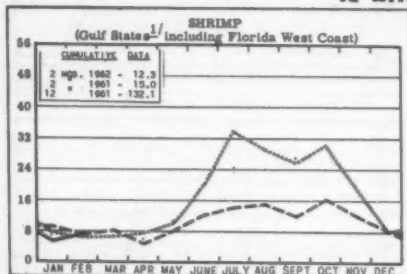


## CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

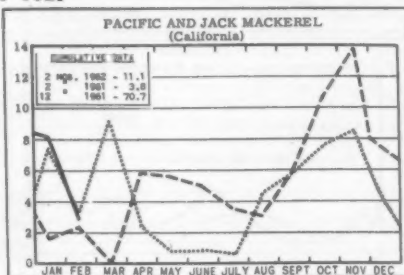
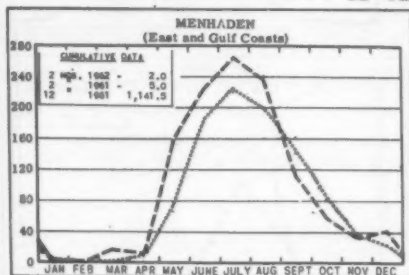


In Millions of Pounds

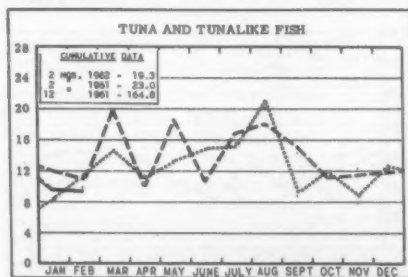
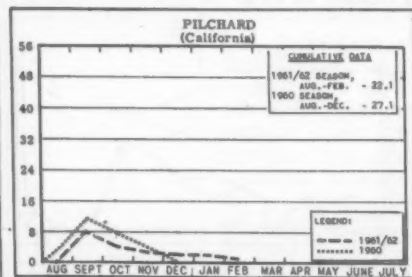


<sup>1/2</sup>1/2 & 1/2. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons

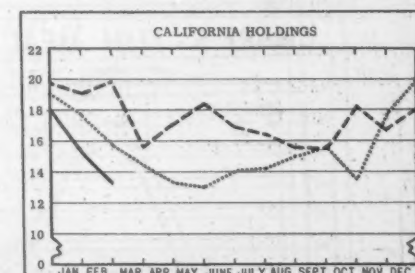
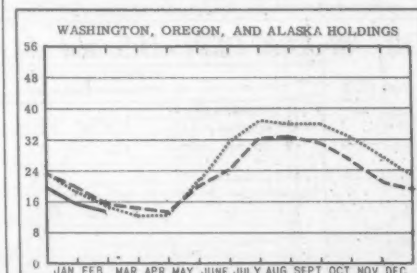
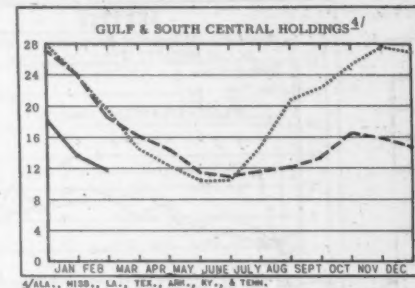
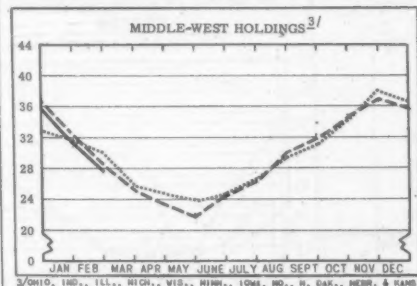
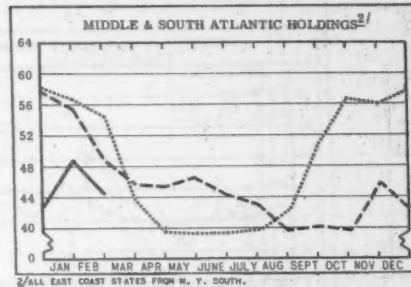
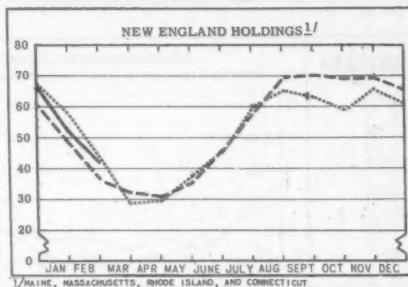
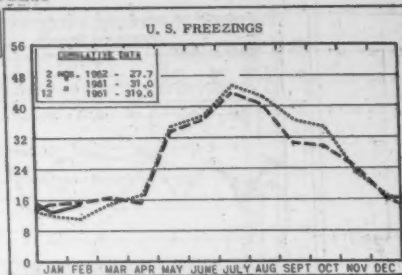
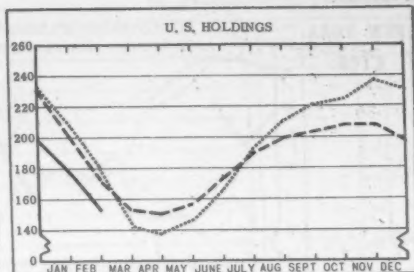


In Thousands of Tons



# CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS \*

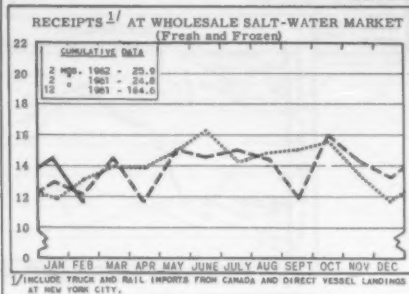
In Millions of Pounds



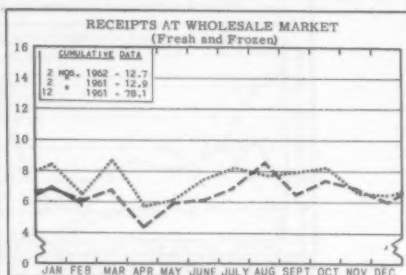
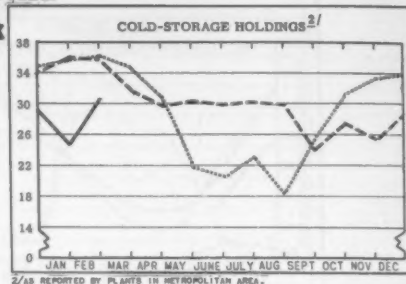
\* Excludes salted, cured, and smoked products.

# CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

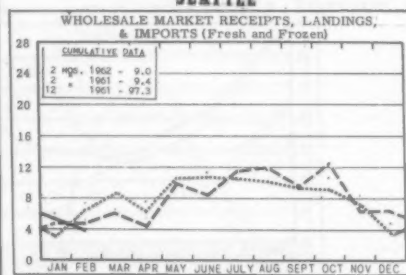
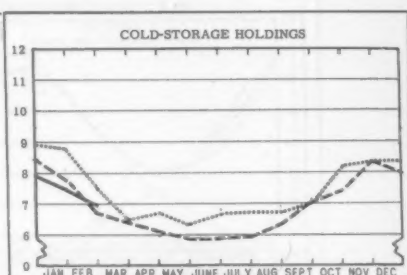
In Millions of Pounds



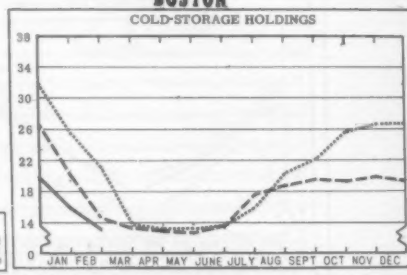
**NEW YORK CITY**



**CHICAGO**



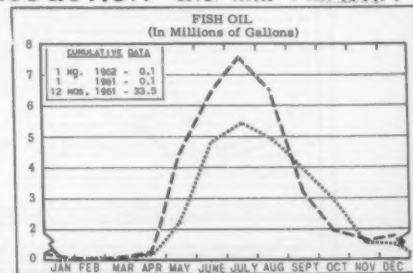
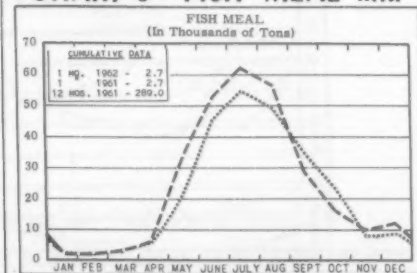
**SEATTLE**



**BOSTON**

LEGEND:  
— 1962  
--- 1961  
..... 1960

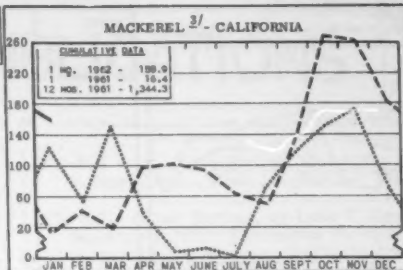
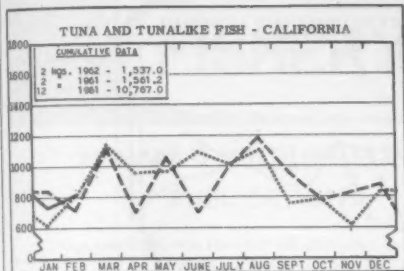
## CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA



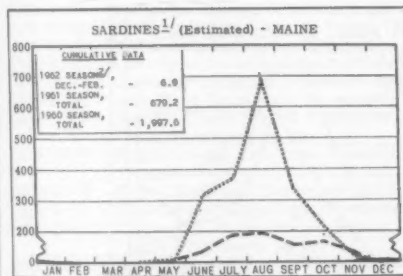
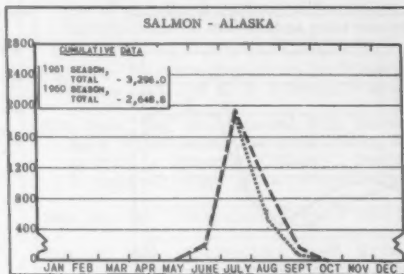
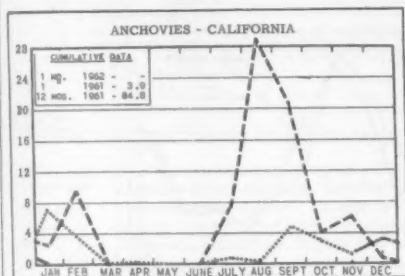


# CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



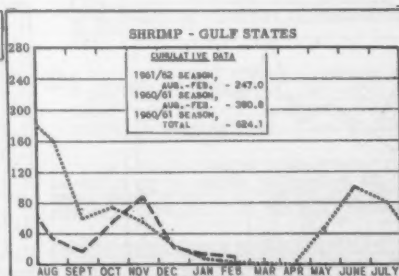
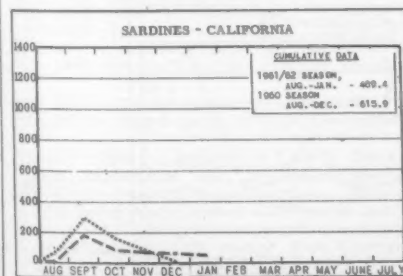
<sup>2/</sup> INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



<sup>1/</sup> INCLUDING SEA HERRING. <sup>2/</sup> THE 1962 SEASON STARTED DEC. 2, 1961

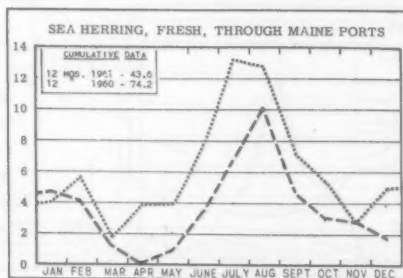
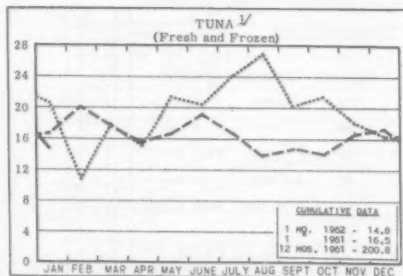
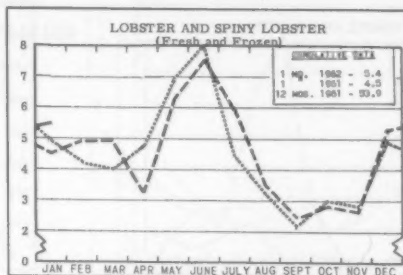
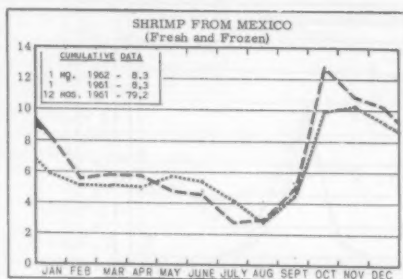
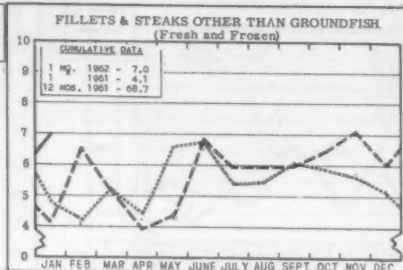
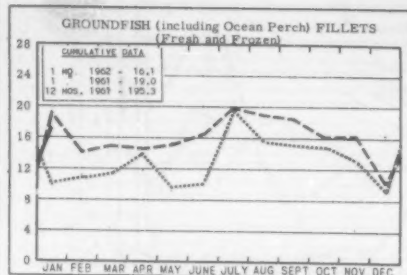
## STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES....	100	$\frac{1}{4}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

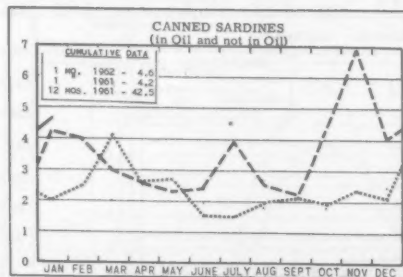
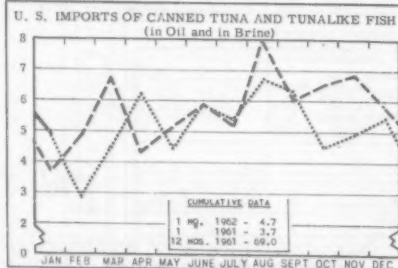


# CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



1/ EXCLUDES LOINS AND DISCS.





# RECENT FISHERY PUBLICATIONS

## FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE  
OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASH-  
INGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.  
FL - FISHERY LEAFLETS.  
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.  
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.  
SSR. - FISH. - SPECIAL SCIENTIFIC REPORTS - FISHERIES  
(LIMITED DISTRIBUTION).

Number	Title
CFS-2767	- Massachusetts Landings, September 1961, 5 pp.
CFS-2773	- Alabama Landings, August 1961, 3 pp.
CFS-2780	- Mississippi Landings, October 1961, 2 pp.
CFS-2781	- Frozen Fish Report, December 1961, 8 pp.
CFS-2783	- Rhode Island Landings, October 1961, 3 pp.
CFS-2785	- Alabama Landings, September 1961, 3 pp.
CFS-2786	- Michigan Landings, November 1961, 2 pp.
CFS-2787	- California Landings, September 1961, 4 pp.
CFS-2788	- Ohio Landings, November 1961, 2 pp.
CFS-2789	- Maine Landings, November 1961, 4 pp.
CFS-2790	- California Landings, October 1961, 4 pp.
CFS-2791	- Minnesota Landings, November 1961, 2 pp.
CFS-2792	- Louisiana Landings, September 1961, 2 pp.
CFS-2793	- Alabama Landings, October 1961, 3 pp.
CFS-2794	- New York Landings, November 1961, 5 pp.
CFS-2795	- Pacific Coast States Fisheries, 1960, Annual Summary, 6 pp.
CFS-2797	- Rhode Island Landings, November 1961, 3 pp.
CFS-2798	- Ohio Landings, December 1961, 2 pp.
CFS-2799	- Mississippi Landings, November 1961, 2 pp.
CFS-2801	- Fisheries of the United States, 1960, Annual Summary, 18 pp.
CFS-2802	- Mississippi River Fisheries, 1960, Annual Summary, 9 pp.
CFS-2803	- New Jersey Landings, December 1961, 4 pp.
CFS-2804	- Maryland Landings, December 1961, 3 pp.
CFS-2805	- Louisiana Landings, October 1961, 2 pp.
CFS-2807	- Alabama Landings, November 1961, 3 pp.
CFS-2809	- South Carolina Landings, December 1961, 2 pp.
CFS-2812	- Texas Landings, November 1961, 3 pp.
CFS-2817	- Wisconsin Landings, December 1961, 2 pp.

FL-523 - Spiny Lobsters, by Lola T. Dees, 7 pp., illus., September 1961. Discusses the commercially valuable species of spiny lobster, their physical characteristics, sexual differences and behavior, food and feeding, habits, molting and growth, reproduction, and the young. Also discusses migrations, enemies and protection against them, methods of capture, utilization of the catch, and efforts at culture.

FL-525 - The Mosquitofish, *Gambusia affinis*, by Lola T. Dees, 5 pp., illus., September 1961.

FL-527 - Brine Shrimp, by Lola T. Dees, 5 pp., illus., September 1961. Discusses the species and occurrence of brine shrimp, its life history, and commercial utilization. Also discusses the collection, processing, hatching, and rearing of brine shrimp. A list of suppliers located in the United States of brine shrimp eggs is included.

FL-532 - Advance Report on the Fisheries of the United States, 1961, by E. A. Power, 25 pp., January 1962.

SSR-Fish. No. 394 - Annual Fish Passage Report--Rock Island Dam, Columbia River, Washington, 1959, by Paul D. Zimmer, Clifton C. Davidson, and Floyd S. Anders, 16 pp., illus., August 1961.

Sep. No. 642 - Blue Crab Trawl Fishery of Georgia.

Sep. No. 643 - Comparison of pH, Trimethylamine Content, and Picric Acid Turbidity as Indices of Iced Shrimp Quality.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE  
BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S.  
FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-65	- The Inshore Fishing Industry of South Africa, and South West Africa: Its Structure, Resources, Economy, etc., 10 pp.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3830, HONOLULU, HAWAII.

Coastal Wind Currents and the Theory of Ekman, by K. N. Fedorov, 7 pp., illus., processed, December 1961. (Translated from Russian, *Izvestia of the Academy of Sciences of the USSR*, Geophysical Series, No. 8, 1959.)

The Pycnocline in Variable Currents, by K. N. Fedorov, 7 pp., illus., processed, December 1961. (Translated from Russian, *Academy of Sciences of the USSR, Oceanology*, vol. 1, no. 1, 1961, pp. 25-29.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS NOT FOR GENERAL DISTRIBUTION BUT IS AVAILABLE FOR REFERENCE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3830, HONOLULU, HAWAII.

Geographical Zones in the Pelagial of the Central Pacific Ocean (From Material from the 26th Cruise of the *Vityaz*), by V. G. Bogorov, 11 pp., processed, December 1961. (Translated from Russian, *Academy*

of Sciences of the USSR. Works of the Institute of Oceanology, vol. 41, 1960, pp. 8-16.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES, 101 SEASIDE AVE., TERMINAL ISLAND, CALIF.

Report of Research Vessel SHOYO MARU--1960, Translation Series No. 4, 13 pp., illus., processed. (Translated from Japanese, Marine Investigations Made in Atlantic Ocean off the West and Northwest Coast of Africa; Land Investigations Made at Ports of Call and Cruise Report, pp. 16-22, 34-39.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

Alaska Seafood Recipes, by Charlotte D. Speegle and Marjorie Bassett, 79 pp., illus., processed. (U. S. Fish and Wildlife Service, Fishery Products Laboratory, Box 647, Ketchikan, Alaska, 1951.) Contains brief explanations of how to purchase fish. Also shows the amount of fishery products needed to feed 50 persons. Includes recipes for preparing cod, flounder or sole, herring roe, halibut, rockfish, sablefish, salmon, smelt or eulachon, trout, clams, crabs, oysters, scallops, and shrimp. Also contains recipes for preparing fish outdoors, using kelp to prepare pickles and relish, and for making sauces and stuffing for fish. Most of the recipes are for serving six.

(Baltimore) Monthly Summary--Fishery Products, December 1961, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I--Fishery Products Production and Market Data, December 1961, 18 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II--Fishing Information, December 1961, 15 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, December 1961 (Review of Chicago Wholesale Fishery Trade in 1961) and January 1962, 22 pp. and 14 pp. respectively. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts

at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the months indicated.

Fluke Tagging, Scup (Porgy) Tagging, Tagging Bulletin, December 14, 1961, 6 pp., processed. (U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Woods Hole, Mass.) A description of recent fluke and scup (porgy) tagging programs conducted by the Woods Hole Biological Laboratory and by the State of New Jersey Department of Conservation and Economic Development. Included is brief preliminary information on the principal area where the tagged fish were caught, as well as the range of area over which they were caught.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, January 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--October and November 1961, 24 pp. each. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 39, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the months indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, January 1962, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D. C.

"Grading Large Numbers of Live Shrimp for Marking Experiments," by Donald M. Allen and T. J. Costello, article, Progressive Fish-Culturist, vol. 24, no. 1, January 1962, pp. 46-48, illus., processed, single copy 25 cents.

Resources for Tomorrow--1961 Annual Report of the Secretary of the Interior (For the Fiscal Year Ended



June 30, 1961), 473 pp., illus., printed, \$1.75. U. S. Department of the Interior, Washington 25, D. C. The first part of this report discusses the Department of the Interior's prime function of planning for the future of America and working to conserve the natural resources which sustain its life. The activities of the Department's bureaus and offices, including the United States Fish and Wildlife Service, are summarized in the second part. Among others, the accomplishments of the Bureau of Commercial Fisheries are described. Activities discussed in detail are research in salmon, tuna, biological oceanography, Great Lakes fisheries, application of atomic energy to fishery products, pesticides, fish protein and oils, fish meal, exploratory fishing, gear studies, and economic studies. Also contains information on research grants and fellowships; construction of laboratories and a new oceanographic-fishery research vessel; marketing services--standards development and inspection, market promotion, movies and demonstrations, statistical studies, and Market News reports; financial assistance--loan fund and mortgage insurance programs; foreign trade activities--tariff negotiations and fish meal promotion; Columbia River fishery program; and the fur-seal resource. A summary of the various activities of the Bureau of Sport Fisheries and Wildlife is also included.

"Separation of the Sexes of *Tilapia nilotica* with a Mechanical Grader," by Y. Pruginin and E. W. Shell, article, *Progressive Fish-Culturist*, vol. 24, no. 1, January 1962, pp. 27-40, illus., processed, single copy 25 cents.

## MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. PRICES, IF READILY AVAILABLE, ARE SHOWN.

### ALGAE:

"Chemical Studies on Marine Algae. XIV--On a New Amino Acid, 'Chondrine,' Isolated from the Red Alga *Chondria crassicaulis*," by Mitsuo Kuriyama, Mitsuzo Takagi, and Kiyochi Murata, article, *Bulletin of the Faculty of Fisheries, Hokkaido University*, vol. 11, August 1960, pp. 58-66, printed. Hokkaido University, Kameda-Machi, Hakodate, Japan.

"Oligosaccharides from Alginic Acid," by D. I. Vincent, article, *Chemistry and Industry*, no. 35, 1960, pp. 1109-1110, printed. Society of the Chemical Industry, 14 Belgrave Sq., London SW1, England.

Overgrazing of Algae by Herbivorous Marine Fishes, by John E. Randall, 1 pp., printed. (Reprinted from *Ecology*, vol. 42, no. 4, Autumn 1961, p. 812.) Ecological Society of America, Duke University Press, Box 6697, College Station, Durham, N. C.

### ALUMINUM CANS:

"Double-Bonus Can Lowers Costs, Ups Sales Appeal," article, *Food Engineering*, vol. 32, no. 11, 1960, pp. 46, 49, 50, illus., printed. Food Engineering, Chilton Co., Chestnut and 56th Sts., Philadelphia 39, Pa.

### AUSTRALIA:

"Fish, Crustacean Legal Lengths," article, *Fisheries Newsletter*, vol. 21, no. 1, January 1962, pp. 15-

17, printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. A table showing comparative minimum legal lengths of fish and crustaceans in all 6 Australian states, and the Commonwealth minimum wherever the Commonwealth has taken action at the request of a state or states. Also includes fish for which there is a minimum legal length in only one state, and thus provides the commercial fishermen of Australia with a comprehensive record of minimum lengths now in force in Australian waters.

### BACTERIOLOGY:

Marine Microbiology (Deep Water), by A. E. Kriss, printed. Academy of Sciences, Moscow, U.S.S.R., 1959.

### BIOCHEMISTRY:

"Report on Trimethylamine in Fish," by W. J. Dyer, article, *Journal of the Association of Official Agricultural Chemists*, vol. 42, May 1959, pp. 292-294, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

"Tryptophan Content of Fish Meat," by Shoji Konosu and Fumio Matsuura, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 26, October 1960, pp. 1040-1049, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

### BRAZIL:

Sudene, *Boletim de Estudos de Pesca*, vol. 1, no. 2, November 1961, 14 pp., illus., processed. Departamento de Estudos Especiais, Setor Pesca, Superintendencia do Desenvolvimento do Nordeste, Edifício Juscelino Kubitschek, 12º Andar, Recife, Brazil. Contains, among others, the following articles: "Fomento a Industria da Pesca (Development of the Fisheries Industry); "Estudo sobre a Biologia de Lagostas Comercializadas em Recife" (Study of the Biology of Commercial Spiny Lobsters in Recife); and "Observacoes sobre Recente Pesca de Lagosteiros Franceses no Nordeste" (Observations on Recent Cruises of the French Spiny Lobster Vessels in the Northeast).

### BYPRODUCTS:

"The Digestibility of Certain Menhaden Fish By-Products," by C. F. Bassett and R. G. Warner, article, *National Fur News*, vol. 33, no. 12, January 1962, pp. 9, 33, printed. National Fur News, Broyes, Allebaugh & Davis, Inc., 200 Clayton St., Denver 6, Colo. Discusses the relative digestibility and nutritional value of four test diets fed to groups of mink. Covers the procedure followed in running a digestibility test, difficulties in conducting digestibility tests, results of the first four digestibility tests, and interpretation of the results. It was found that the protein digestibility of other diets was approximately 1% percent greater than for the diet containing fish, but the latter was adequate for growth.

### CALIFORNIA:

California Fish and Game, vol. 48, no. 1, January 1962, 86 pp., illus., printed, single copy 75 cents. Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif. Includes, among others, the following articles: "The Names of Certain Marine Fishes of California," by Phil M. Roedel; "The Pismo Clam in 1960," by John L. Baxter; "Age Determination of the Pacific Albacore of the California Coast," by Robert R. Bell; "Water Velocities Tolerated by Spawning

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Kokanee Salmon," by Glenn E. Delisle; and "Purse Seining for Pacific Albacore," by John A. Shaver.

#### CANADA:

Annual Report of the Department of Natural Resources, Province of Saskatchewan, for the Fiscal Year Ended March 31, 1961, 180 pp., illus., printed. Department of Natural Resources, Regina, Saskatchewan, Canada, March 31, 1961. A compilation of reports of the branches of the Department of Natural Resources, including a 20-page report of the Fisheries Branch. The section on fisheries covers activities in management, research, fish culture, and information on enforcement. Statistical data are also given on fish production and value.

Canadian Fisheries Reports, no. 1, 58 pp., illus., printed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada, September 1961. A new periodical published to disseminate specialized information of interest to the fishing industry, from the catching to the end product. Articles may deal with conservation, inspection, development, economics, and related subjects. This issue contains the following articles: "A Study of the Influence of Freezing and Frozen Storage on Bacterial Survival in Fish Fillets," by N. Neufeld and R. Garm; "The Effect of Freezing and Subsequent Frozen Storage on the Survival of Bacteria Found on Freshwater Fish Fillets," by G. R. Douglas and J. A. Clarke; "Abnormally Coloured Groundfish Fillets," by J. P. Hennessey; "Distinguishing Canned Brisling from Canned Sild Sardines," by J. H. Mann; "Some Observations Concerning Experimental Application of Objective Quality Tests to West Coast Fish," by H. L. A. Tarr; "Observations on Bacterial Counts and Conformance to C. G. S. B. Tolerances for Defects," by J. P. Hennessey and A. R. Johnston; and "Progress Report on Salt Codfish Block Project."

#### CANS:

"Mass Produced Aluminum Cans from Precoated Foil," article, Food Processing, vol. 21, no. 12, 1960, pp. 26-28, illus., printed. Food Processing, Putman Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

#### CATFISH:

The Fresh-Water Catfishes of Texas and How to Know Them, by William H. Brown, Bulletin No. 39, 9 pp., illus., printed. Texas Game and Fish Commission, Austin, Texas, June 1961. Presents an accurate means for identifying the various catfish native to the inland waters of Texas. Of interest to both fishermen and students of fishery biology. Contains a key outlining the distinguishing features of each species of catfish and a detailed description of each including common and scientific names, physical characteristics, distribution, and methods of capture. Also includes a diagram showing the differing external structures of the various species.

#### CAVIAR:

"Factors Affecting Quality of Processed Caviar (Sturgeon Roe) on Storage," by Yu. I. Raninskaya, article, Chemical Abstracts, vol. 55, 97131, May 15, 1961.

#### CHILE:

Explotacion Pesquera y Aprovechamiento de los Productos de la Pesca en Chile (Fishery Development and Utilization of Fishery Products in Chile),

Primer Congreso Chileno de Ingenieria Quimica, vol. III, 307 pp., printed in Spanish. Instituto de Ingenieros Quimicos de Chile, Concepcion, Chile, August 1959. Contains articles by engineers, nutritionists, biologists, and others on Chile's fishery problem, fishery biology, fishery products in human nutrition, marine plants, fish meal for animal consumption, frozen fishery products, fishing ports and docks, fishing vessels, fishery economics in relation to processed fishery products, fishery statistics, commercial development of the fisheries, and fishery politics and legislation.

#### CLAMS:

Problems Involved in the Development of Clam Farms, by Harry J. Turner, Jr., Publication 4451, 12 pp., illus., printed. (Reprinted from The Smithsonian Report for 1960, pp. 465-472; also reprinted from Oceanus, vol. 7, no. 1, September 1960.) Smithsonian Institution, Washington 25, D. C., 1961. Discusses the history of the soft-shell clam fishery, efforts at conservation and development, stocking a clam farm, predators, settlement of clams, geological factors involved in clam settlement, and need for further study.

#### COD:

"The Expressible Fluid of Fish Fillets. X--Sodium and Potassium Content in Frozen and Iced Fish," by R. M. Love, and "XI--Ice Crystal Formation and Cell Damage in Cod Muscle Frozen Before Rigor Mortis," by R. M. Love and S. B. Haraldsson, articles, Journal of Science of Food and Agriculture, vol. 12, June 1961, pp. 439-449, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

#### COMMISSIONS:

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*Pennsylvania Fishes*, by Albert S. Hazzard, 24 pp., illus., printed, 25 cents. (Reprinted from *Pennsylvania Angler*, April 1956-February 1957.) Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa. Contains drawings and brief descriptions of 51 fish found in Pennsylvania waters. Describes for each fish its range, characteristics, habits, food, and lures to be used. Should be helpful

to fishermen and others interested in knowing something about most of the common fish of Pennsylvania and the lures and methods used in taking them. One reason for the large number of fish is that Pennsylvania lies within three major watersheds. There are 33 major families of fish found within its boundaries. Some have been introduced successfully, such as the carp and brown trout. Others have been introduced with no permanent success, such as the grayling, Atlantic salmon, and at least one species of the Pacific salmon. Important transplants to certain waters within the State may also be noted, for example the smallmouth bass and the walleye or yellow pike were not native to the Delaware or to the Susquehanna rivers, although originally found in the Ohio and in St. Lawrence drainages.

#### PERU:

*Desarrollo de la Pesca Peruana en 1961 Comparada con el Bienio 1959/60* (Development of the Peruvian Fishery in 1961 Compared with the Biennium 1959/60), by Javier Iparraguirre Cortez, *Serie de Divulgacion Cientifica* 16, 21 pp., illus., printed in Spanish. Servicio de Pesquero, Ministerio de Agricultura, Lima, Peru.

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national Association of Milk and Food Sanitation, Box 437, Shelbyville, Ind.

"A Comparison of Some Taste-Test Methods," by N. T. Gridgemen, article, *Journal of Food Science*, vol. 26, March-April 1961, pp. 171-177, printed. Institute of Food Technologists, 510-522 No. Hickory St., Cham-paign, Ill.

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#### RADIATION PRESERVATION:

"Progress in the USAEC Radiation Pasteurized Foods Program," by Joseph E. Machurek, article, *Food Irradiation Quarterly Newsletter*, vol. 1, April-June 1961, pp. A3-A6, printed. O.E.E.C. Mission, Publications Office, Suite 1223, 1346 Connecticut Ave. NW., Washington 6, D. C.

#### REFRIGERATION:

"Refrigeration in Soviet Fishing Industry," by E. G. Pavlov, article, *Kholodil'naia Tekhnika*, no. 6, 1961, pp. 4-7, printed in Russian. *Kholodil'naia Tekhnika*, c/o Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

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"The Fishes of Northern Rhodesia," by P. B. N. Jackson, 153 pp., printed, 7s. 6d. (about US\$1.05). The Government Printer, P. O. Box 136, Lusaka, Northern Rhodesia, September 1961. Discusses fish systematics in Northern Rhodesia, the Northern Rhodesian zoogeographical region, and nomenclature. Contains a key to all indigenous species of fish, including families, and genera. Most of the book is devoted to descriptions of 155 species of fish native to Northern Rhodesia.

#### SALMON:

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#### SALT FISH:

"A Review of the Salt Fish Industry of Kerala (South India)," by S. N. Rao and A. G. Vasavan, *Occasional Paper 81/5*, 6 pp., printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Bangkok, Thailand, 1961.

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#### SARDINES:

"Evolution de la Peche a la Sardine sur les Cotes Francaises de la Mediterranee" (Evolution of the Sardine Fishery on the French Coasts of the Mediterranean), by Cl. Maurin and S. di Meglio, article, *France Peche*, vol. 6, no. 57, December 1961, pp. 27-30, illus., printed in French. France Peche, Service Abonnement, Boite Postale 179, Lorient (Morbihan), France.

"Izyskanie Optimal'nykh Rezhimov Prigotovleniia Konservov 'Atlanticheskije Sardiny v Masle,'" (Optimum Conditions for Production of Canned Fish "Atlantic Sardine in Oil"), by A. L. Petelina and S. A. Artiukhova, article, *Rybnoe Khoziaistvo*, vol. 36, no. 1, 1960, pp. 57-61, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.



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## SAURY:

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## SCOTLAND:

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## SEAPORT:

United States Seaports, Alaska, Pacific Coast, and Hawaii, Port Series, Part I, 176 pp., illus., processed, \$1. Maritime Administration, U. S. Department of Commerce, Washington, D. C., June 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents data on port administration; Federal functions and services; terminal services, rates, and charges; labor contracts, rules, benefits, wage rates, and related data; foreign and domestic trade; port development; policy and legal actions taken by the government affecting the port industry.

## SEA URCHIN:

"The Edible Sea Urchin, *Triplonectes esculentus*, Leske in Barbados," by J. B. Lewis, article, West Indies Fisheries Bulletin, no. 5, September/October 1961, pp. 1-3, processed, 17 B.W.L. cents (about 10 U. S. cents). The Federal Fisheries Adviser, Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad. Discusses the commercially important sea urchin, its occurrence, breeding, growth, reaction to light, and feeding habits.

## SEAWEED:

"Chemical Studies on Volatile Constituents of Seaweed. XVI--Their Phylogenetic and Biochemical Significance," by Teruhisa Katayama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, January 1961, pp. 75-84, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Feeds from Seaweed or Mosses," by Georges E. A. Delarche, article, Chemical Abstracts, 7926b, vol. 54, April 25, 1960.

## SEAWEED MEAL:

"Seaweed Meal for Human Consumption," by Algea Produkter A/S, article, Chemical Abstracts, vol. 55, 17949b, September 4, 1961.

## SERRANIDS:

Materials for a Revision of SERRANUS and Related Fish Genera, by C. Richard Robins and Walter A. Starck, II, 56 pp., illus., printed. (Reprinted from Proceedings of the Academy of Natural Sciences of Philadelphia, vol. 113, no. 11, December 29, 1961,

pp. 259-314). Academy of Natural Sciences of Philadelphia, 19th St. and the Parkway, Philadelphia 3, Pa.

## SMALL BUSINESS MANAGEMENT:

Are You Using Your Space Effectively?, by Edward L. Anthony, Technical Aids for Small Manufacturers No. 77, 4 pp., processed. Small Business Administration, Washington 25, D. C., November-December 1961. Increased profits, less confusion, and better morale can result from using available space more effectively. Many small plants have benefited from rearrangement. This leaflet shows some practical ways of looking at the problem of space utilization. The use of office space also deserves attention. Worthwhile rearrangements can often be made with the knowledge of a few basic layout principles.

Managing Women Employees in Small Business, by Eleanor Casebier, Small Marketers Aids No. 75, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1962. A leaflet offering suggestions for managing women employees in small business. Stress is laid on the fact that women want democratic leadership. Practices that help to promote efficiency are discussed with suggestions that small firm owner-managers can use when examining their own policies and procedures. There is also a list of 22 suggestions a manager can use to encourage women employees to work efficiently.

## SMALL BUSINESS ADMINISTRATION:

U. S. Government Purchasing, Specifications and Sales Directory (A Guide for Selling or Buying in the Government Market), 124 pp., printed, 60 cents. Office of Procurement and Technical Assistance, Small Business Administration, Washington, D. C., July 1960. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Provides information on selling to the Government and to Government contractors; lists products and services bought by the major military purchasing offices and indicates, by means of code numbers following the products or services, the purchasing offices that buy them; and discusses local purchasing by military installations and gives a State-by-State listing of installations that are possible sources of business for small concerns. Also lists products and services purchased by the major Federal civilian agency purchasing offices and indicates, again by means of code numbers following the products and services, the purchasing offices that buy them; provides a guide to Government specifications--what they are, how they are used, and where they may be obtained or reviewed by prospective bidders.

## SOUTH CAROLINA:

Annual Report, 1960-1961, Contribution No. 35, 9 pp., illustrated, printed. (Reprinted from Report of South Carolina Wildlife Resources Department, Fiscal Year July 1, 1960-June 30, 1961.) Bears Bluff Laboratories, Wadmalaw Island, S. C., January 1962. A detailed description of the activities of Bears Bluff Laboratories for the period under review, covering the study of oysters, shrimp, blue crabs, finfish, and pond cultivation.

## SPINY LOBSTERS:

"Proteccion de la Langosta" (Protection of the Spiny Lobster), by L. Faure, article, Puntal, vol. 8, no.

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93, December 1961, pp. 4-6, illus., printed in Spanish. Puntal, 21 San Fernando, Alicante, Spain.

Segunda Pesca Exploratoria y Datos Biologicos de la Langosta (PANULIRUS ARGUS) en Cuba (Second Exploratory Fisheries Expedition and Biological Data on the Spiny Lobster (*Panulirus argus*) in Cuba), by R. J. Buesa Mas, Contribution No. 12, 69 pp., illus., printed in Spanish. Centro de Investigaciones Pesqueras del Departamento de Pesca del Instituto Nacional de Reforma Agraria, Havana, Cuba, May 1961.

"Sobre a Biologia e a Pesca das Lagostas em Pernambuco (Brasil)" (On the Biology of and Fishery for Spiny Lobsters in Pernambuco, Brazil), by Melquiades Pinto Paiva, article, *Boletim da Pesca*, vol. 13, no. 73, December 1961, pp. 11-21, illus., printed in Portuguese with English summary. *Boletim de Pesca*, R. S. Bento, 644, 4<sup>o</sup> -Esq., Lisbon, Portugal.

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"Sardiny iz Kaspijskoj Kilki" (Sardine-Like Packs with Sprats from the Caspian Sea), by M. V. Kalantarova, M. V. Maksimova, and J. K. Rogova, article, *Trudy, Tekhnologia Rybnikh Produktov*, vol. 60, 1959, pp. 81-93, illus., printed in Russian. *Trudy, Tekhnologia Rybnikh Produktov, VNIRO, Vsesoiuzny Nauchno-Issledovatel'ski Institut, Moscow, U.S.S.R.*

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"Chemical Composition of Ikashiohara, Salted Guts and Meat of Squid," by Hiroshi Takeya and Yukio Okuda, article, *Chemical Abstracts*, vol. 55, 7694a, April 17, 1961.

#### STORAGE:

"Storage of Dehydrated Cod. I," by N. A. Matheson, article, *Food Processing and Packaging*, vol. 30, no. 354, 1961, pp. 87-91, 98; "Storage of Dehydrated Cod. II," no. 355, 1961, pp. 123-127, illus., printed. *Food Processing and Packaging, Tothill Press Ltd., 33 Tothill St., Westminster, London SW1, England.*

#### STRIPED BASS:

"Further Returns of Striped Bass, *Roccus saxatilis*, Tagged from Deep Water During Winter in Chesapeake Bay, Maryland," by Romeo J. Mansueti and George J. Murphy, article, *Chesapeake Science*, vol. 2, nos. 3-4, September-December 1961, pp. 209-212, illus., printed, single copy 75 cents. Natural Resources Institute, University of Maryland, Chesapeake Biological Laboratory, Solomons, Md.

#### SUBMARINES FOR FISHERY RESEARCH:

"Exploring Under Sea by Towvane," article, *Fisheries Newsletter*, vol. 20, August 1961, p. 15, printed. Commonwealth Fisheries Office, Department of Primary Industry, Canberra, Australia. Describes a new device for underwater observation which can be operated by one who is not a diver. The towvane is a heavily-constructed pressure-tight steel vessel which can be towed under water, dive toward the bottom, and then level off along the sea bottom. The towvane has no power unit, buoyancy tanks, or batteries. No special skill is needed to operate the towvane, which is itself buoyant and must be moving in order to submerge. Diving in

the towvane is said to be a safe operation because of the slow towing speed, heavy construction of the towvane, and the constant attention from the people in the boat that are towing the device. If it should become necessary, however, the diver can get out by himself. To do this he would commence breathing from his emergency aqualung, flood the towvane (by opening a gate valve) to equalize pressure, and then open a hatch and swim to the surface.

#### SUNFISH:

Hybridization Between Three Species of Sunfish (LEPOMIS), by William F. Childers and George W. Bennett, *Biological Notes* No. 46, 12 pp., illus., printed. Natural History Survey Division, Department of Registration and Education, Urbana, Ill., November 1961

#### TAIWAN:

Taiwan Fisheries Yearbook 1960 Edition, 185 pp., illus., printed in Chinese and English. Department of Agriculture and Forestry, Provincial Government of Taiwan, Taipei, Taiwan, August 1960. Contains statistical tables showing fishermen's organizations and membership, fishermen, status of fishing vessels, status of ice making and cold storage industries, fisheries production, and quantity of supply and sale of fishery products and their average value at principal fish markets. Also includes data on processed marine products, fish culture areas, production of fish fries, number of casualties of fishermen, losses and damage to fishing vessels and gear, fishing activity at principal fishing harbors by type of craft, foreign trade in fishery products, and related information. Most data are for 1959.

#### TARIFFS:

Forty-Fifth Annual Report of the United States Tariff Commission (Fiscal Year Ended June 30, 1961), House Document No. 276, 82 pp., printed. United States Tariff Commission, Washington 25, D. C., 1962. Includes, among others, a section which discusses the investigation conducted on the domestic shrimp industry.

#### TERRITORIAL WATERS:

"La Mer Territoriale et les Zones de Peche Reserve" (Territorial Waters and the Restricted Fishery Zones), by R. Lagarde, article, *La Peche Maritime*, vol. 40, no. 1005, December 1961, pp. 875-882, illus., printed in French, single copy 22.50 NF (about US\$4.55). *La Peche Maritime*, 190, Boulevard Haussmann, Paris 8<sup>e</sup>, France.

#### TRADE LISTS:

The Bureau of International Business Operations, U.S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1 a copy.

Canneries and Frozen Foods--Producers and Exporters--Algeria, 6 pp. (December 1961). Lists the names and addresses and types of products handled by each firm. Includes fish canneries and exporters.

Canneries and Frozen Foods--Producers and Exporters--Morocco, 6 pp. (December 1961). Lists the names and addresses, size of firms, and types of

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products handled by each firm. Includes fish canneries, freezers, and exporters.

#### TRAWLER-FREEZER:

"Pererabotka Ulovov Sardiny i Drugikh Ryb na BMRT v Uslovishk Tropikov (The Processing of Sardines and other Fish on Board Bmrt, a Large Size Trawler-Freezer, in Tropical Conditions)," by Iu. A. Zorzhova, article, Rybnoe Khoziaistvo, vol. 36, no. 4, 1960, pp. 64-68, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

#### TRAWLERS:

"A 151-Ft. Norwegian-Built Stern Trawler," article, Motor Ship, vol. 41, no. 484, 1960, pp. 374-375, illus., printed. Motor Ship, Temple Press Ltd., Bowling Green Lane, London EC4, England.

#### TRAWLING:

"Novvie Tralovyye Deski 'Akula-2'" (New Otter Boards "Akula-2"), by E. Iu. Ianson and S. A. Minovich, article, Rybnoe Khoziaistvo, vol. 36, no. 4, 1960, pp. 25-33, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

"Premiers Resultats des Essais de Modeles de Chaluts" (First Test Results with Trawl Models), by C. Nedelec, article, Science et Peche, no. 92, April 1961, 5 pp., illus., printed in French. Institut Scientifique et Technique des Peches Maritimes, 59 Ave. Raymond-Poincare, Paris XVI, France.

Sobre el Encogimiento de las Mallas de Canamo del Copo de las Redes de Arrastre (On the Shrinkage of Hemp Meshes in the Bottom of Trawl Nets), by Alfonso Rojo Lucio, Boletin del Instituto Espanol de Oceanografia, no. 104, April 1961, 22 pp., illus., printed in Spanish. Instituto Espanol de Oceanografia, Alcala, 27, Madrid, Spain.

"Ob Usloviakh Obespechivaniushchikh Ustoichivoe Dvizhenie Pelagicheskogo Trala v Tolshche Vody" (On Conditions Providing Stable Motion of Pelagic Trawl in Midwater), by I. R. Matrosov, article, Rybnoe Khoziaistvo, vol. 36, no. 3, 1960, pp. 30-44, illus., printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

"Een Verbeterd Hangerblok" (An Improved Trawl Block), by J. Reuter and P. Ouwehand, article, Visserij-Nieuws, vol. 10, no. 7, 1960, pp. 102-105, illus., printed in Dutch. Directie der Vissereyen, 1 van den Boschstraat 4, The Hague, Netherlands.

#### TUNA:

An Observation on the Development of Tuna-like Fishes Trolling by Motorized Vessels (Indonesia), by M. Unar, Occasional Paper 61/6, 6 pp., printed. Indo-Pacific Fisheries Council, Food and Agriculture Organization of the United Nations, Bangkok, Thailand, 1961.

#### UNDERWATER PHOTOGRAPHY:

Photography of the Ocean Floor, by A. S. Laughton, Publication 4441, 17 pp., illus., printed. (Reprinted from The Smithsonian Report for 1960, pp. 319-326;

also reprinted from Endeavour, vol. 18, no. 72, October 1959.) Smithsonian Institution, Washington 25, D. C., 1961.

#### VENEZUELA:

El Mercadeo del Pescado Fresco de Mar con Referencia Especial al Abastecimiento en Caracas (The Market for Fresh Sea Fish with Special Reference to the Supply in Caracas), by John B. Schneider and Alejandro de Leon, 136 pp., illus., printed in Spanish. Division de Economia Agricola, Ministerio de Agricultura y Cria, Caracas, Venezuela.

#### WHALING:

"Catch Material in the Season 1961/62," article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 51, no. 1, January 1962, pp. 16-27, printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway. Presents details on number of factoryships, catcher boats, gross tonnage of the vessels, and other information on the fleets engaged in 1961/62 whaling operations.

"22 Fleets Hunt Antarctic Whales," article, Fisheries Newsletter, vol. 21, no. 1, January 1962, p. 18, printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia.

#### WHITE PERCH:

"Movements, Reproduction, and Mortality of the White Perch, Roccus americanus, in the Patuxent Estuary, Maryland," by Romeo J. Mansueti, article, Chesapeake Science, vol. 2, nos. 3-4, September-December 1961, pp. 142-205, illus., printed, single copy 75 cents. Natural Resources Institute, University of Maryland, Chesapeake Biological Laboratory, Solomons, Md.

#### WORLD TRADE:

The following World Trade Information Service Reports, published by the Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Investment Law of the Ivory Coast, Economic Report No. 61-72, WTIS Part 1, 12 pp., 15 cents, November 1961.

Licensing and Exchange Controls--Turkey, Operations Report No. 61-73, WTIS Part 2, 4 pp., 10 cents, November 1961.

Import Tariff System of Trinidad and Tobago, Operations Report No. 61-78, WTIS Part 2, 2 pp., 10 cents, November 1961.

Import Tariff System of Indonesia, Operations Report No. 61-81, WTIS Part 2, 2 pp., 10 cents, November 1961.

Import Tariff System of Jamaica, Operations Report No. 61-83, WTIS Part 2, 2 pp., 10 cents, November 1961.

Import Tariff System of Ecuador, Operations Report No. 61-84, WTIS Part 2, 2 pp., 10 cents, November 1961.

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Licensing and Exchange Controls--Belgium-Luxembourg, Operations Report No. 61-89, WTIS Part 2, 4 pp., 10 cents, November 1961.

Food Regulations of Chile, Operations Report No. 61-90, WTIS Part 2, 4 pp., 10 cents, November 1961.

Marking and Labeling Requirements of Canada, Operations Report No. 61-91, WTIS Part 2, 16 pp., 10 cents, November 1961.

Marking and Labeling Requirements of Austria, Operations Report No. 61-92, WTIS Part 2, 8 pp., 10 cents, December 1961.



#### DISCOVERY OF FISH REMAINS MAY SUPPORT 50-YEAR-OLD ANTARCTIC ICE SHELF THEORY

McMurdo Sound, Antarctica--Partially decomposed remains of fish and invertebrates that may prove to be many hundreds of years old have been discovered on the surface of the frozen ice shelf near here, the National Science Foundation reported on December 7, 1960.

Well over 50 of the remains were found scattered through a small area about a mile and a half from the front of the Ross Ice Shelf near the easternmost end of the Dailey Island group by a research party from the University of Michigan.

The presence of these fish and invertebrates in that particular area suggests the occurrence of large fish in the sea beneath the ice and provides evidence for a long-standing hypothesis regarding the formation of the ice shelf itself.

The largest intact fish measured 65 inches in length, whereas some detached heads appeared to have come from still larger fish. The fish were thus the largest yet found in the waters of McMurdo Sound and the Ross Sea, and indicate that a well-developed fauna exists under the permanent ice shelf.

How the fish and invertebrates got to the surface of the ice that far from open water recalls a hypothesis put forth by Frank Debenham, a geologist with Captain Robert Scott's British (Terra Nova) Antarctic expedition of 1910 to 1913. Debenham reported finding the headless remains of a somewhat smaller fish and some perfectly preserved sponges and corals in the small general area of the ice shelf. He suggested that they might have been trapped in the ice by freezing when the bottom of the ice shelf touched the sea floor, and that they were slowly brought to the top by the progressive melting of the upper surface while new ice formed on the bottom surface.

On the basis of the evidence available to him, Debenham concluded that the ice shelf was nourished by the freezing of sea water on its bottom surface and that the main body of the Ross Ice Shelf (196,000 square miles, or about the size of Spain) might be nourished in a similar manner.

While Dr. Swithinkbank, a glaciologist who has spent many seasons in the Antarctic, believes the main body of the Ross Ice Shelf is nourished principally by the accumulation of snow on its upper surface, he agrees that the discovery of these fish apparently preserved for some hundreds of years in the ice, may support Debenham's hypothesis with respect to the McMurdo Ice Shelf--that it shows definite evidence of surface melting.

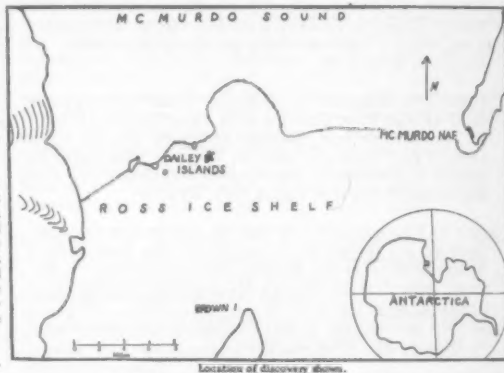
This method of nourishment of a permanent floating ice sheet of considerable area and thickness, he believes would be unique, the only known parallel being the small ice shelf off the north coast of Ellesmere Island in the Arctic.

The ice where the fish were found is probably more than 100 feet thick and the surface is at least 10 to 15 feet above sea level. Because the fish, and especially the relatively immobile invertebrate species, could scarcely have reached the surface alive--the only possible access to the sea being the intermittent tidal cracks in the ice bordering the nearby island--the finding would lend credence to Debenham's hypothesis.

Numerous deep-water invertebrates including pelecypods (bivalves or clams), gastropods (univalves or snails), brachiopods (lamp shells), siliceous sponges, and anthozoan corals were also encountered at or near the ice surface. Some of them were extremely fragile and, in the case of several of the glass sponges, were still attached to rocks that came with them from the sea floor.

In order to identify exactly the species of the discovered fish and to determine their approximate age, an Associate Professor of Biology at Stanford University, at McMurdo under a National Science Foundation grant, made a helicopter flight to the site of the discovery and collected several specimens. He said the fish appear to be members of at least two genera of nototheniidae, the most common group of Antarctic fishes. He is sending preserved specimens back to the United States for identification, and bone samples to New Zealand for carbon-14 dating.

Should the fish prove to be very old, Debenham's hypothesis will have received strong support. On the other hand, if the fish are found to have died only recently, some other explanation must be found for their presence on the ice surface so far from the open sea. Depending on what the true ice thickness is near the Dailey Islands and the rate of surface melting, Swithinkbank speculates that it might have taken anywhere from 100 to 2,000 years for the fish to reach the surface. How long the fish have been on the surface is difficult to determine. In some cases even the fish meat was especially well preserved.







### FIRST OCEANGOING HYDROFOIL SHIP

The first oceangoing hydrofoil ship will be named the HS (Hydrofoil Ship) Denison, in honor of the man who initiated the project, the Chairman of the Federal Maritime Board and Maritime Administrator, U. S. Department of Commerce, announced on March 15, 1961.

Charles R. Denison was appointed in August 1957 as the first Coordinator of Research for the Federal Maritime Board and Maritime Administration. He served as advisor and consultant in the planning, execution, and guidance of the maritime research and development program which has been undertaken by the Board and Administration for the improvement of the U. S. Merchant Marine.



Artist's conception of the 80-ton, 60-knot oceangoing hydrofoil craft now nearing completion for the Maritime Administration.

One of the projects sponsored by Denison was an experimental oceangoing hydrofoil craft. He felt that the previously successful use of hydrofoils in sheltered water services might point the way to development of a ship which by lessening the drag of friction of water on the hull would permit far greater speeds than have been economically feasible for conventional ships.

After feasibility and design studies in hydrofoils by Dynamic Developments, Inc., an affiliate of Grumman Aircraft Engineering Corp., the Maritime Administration awarded this company a contract to design and construct an 80-ton, 60-knot oceangoing hydrofoil craft. The Government is paying about \$1.5 million of the estimated \$5 million value of the ship, with part of the production costs being borne by associated firms. The ship is designed to determine the practicality of large hydrofoils in the 500-1,000 ton range for high-speed ocean transportation. The ship was expected to be launched in mid-summer of 1961, and is to be delivered almost immediately after launching.

Note: See Commercial Fisheries Review, Aug. 1961 pp. 42-43.

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